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Performance of Single-Stage Axial-Flow Transonic Compressor With Rotor and Stator Aspect Ratios of 1.19 and 1.26, Respectively, and With Design Pressure Ratio of 2.05

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Performance of Single-Stage Axial-Flow Transonic Compressor With Rotor and Stator Aspect Ratios of 1.19 and 1.26, Respectively, and With Design Pressure Ratio of 2.05

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SUMMARY

The overall and blade-element performances of an axial-flow, transonic-compressor-inlet stage are presented herein. The stage is one of a series of single stages that were designed and tested to investigate the performance characteristics of low-aspect-ratio blading for the inlet stages of an advanced-core compressor. This stage was designed for a pressure ratio of 2.05 at an airflow of 20.2 kg/sec and a rotor tip speed of 454 m/sec. The rotor aspect ratio is 1.19, and the stator aspect ratio is 1.26. The stage was tested over the stable operating flow range from 50 to 100 percent of design speed. At the design speed the rotor and stage achieved peak efficiencies of 0.876 and 0.840 at pressure ratios of 2.056 and 2.000, respectively. The stage peak efficiency occurred at a airflow that was about 3 percent higher than the design airflow. The stage achieved a stall margin of 10 percent at design speed.

INTRODUCTION

The research program on axial-flow fans and compressors for advanced air-breathing engines at Lewis includes the study of advanced core-compressor designs having high pressure ratio (about 20:1), good efficiency, and sufficient stall margin in as few stages as possible. A preliminary study of the aerodynamic and mechanical designs for an eight-stage core compressor having a pressure ratio of 20:1 (ref. 1) resulted in a compressor design of constant meanline diameter with an inlet hub-tip ratio of 0.7, and an inlet rotor-tip speed of 455 meters per second. Both the speed and the loading per stage are considerably higher than in state-of-the-art core compressors. An experimental research program was therefore established to evaluate the performance characteristics and establish a data base for single stages that are representative of the inlet, middle, and rear stages of the eight-stage 20:1 pressure ratio compressor.

Four single stages that are representative of the inlet stage for the eight-stage compressor were designed and tested. These four stages (designated stages 35, 36, 37, and 38) represent two levels of pressure ratio and two levels of rotor aspect ratio. Stages 35 and 37 have a rotor aspect ratio of 1.19 and design pressure ratios of 1.82 and 2.05, respectively; stages 36 and 38 have a rotor aspect ratio of 1.63 and design pressure ratios of 1.82 and 2.05, respectively. The design and overall performance comparisons for all four stages are presented in reference 2. Blade-element data for stage 35 are presented in reference 3.

This report represents the radial distribution of performance parameters and detailed blade-element data for the low-aspect-ratio, high-pressure-ratio stage in this series (stage 37). The overall performance of the stage is also included. Data are presented over the stable operating flow range for rotative speeds from 50 to 100 percent of design speed in both tabular form and plotted form. The symbols and equations are defined in appendices A and B.

AERODYNAMIC DESIGN

The detailed aerodynamic design is presented in reference 2, and therefore only a brief summary of the aerodynamic design parameters is presented herein.

The flow path geometry, including instrumentation stations, is shown in figure 1. The design overall performance parameters are shown in table I. The stage was designed for a total-pressure ratio of 2.05, an airflow of 20.2 kg/sec, and a rotor tip speed of 454 m/sec. The design blade-element parameters are presented in table II. The rotor-inlet relative Mach number varies from 1.493 at the tip to 1.125 at the hub; the stator-inlet Mach number varies from 0.736 at the tip to 0.810 at the hub. The rotor diffusion factor at the hub and tip is approximately 0.56, with a maximum value of 0.58 at 85 percent of span; the stator hub diffusion factor is 0.52.

The blade geometry is presented in table III for the rotor and stator. Both rotor and stator have multiple circular arc (MCA) blade shapes. The rotor has 36 blades; its tip solidity is 1.3; and its aspect ratio is 1.19. The stator has 46 blades; its tip solidity is 1.3; its aspect ratio is 1.26. A photograph of the rotor and stator is shown in figure 2. Manufacturing coordinates for both rotor and stator are presented in reference 2.

APPARATUS AND PROCEDURE

Compressor Test Facility

The compressor stage was tested in the Lewis single-stage compressor test facility (fig. 3), which is described in detail in reference 4. Atmospheric air enters the facility at an inlet located on the roof of the building and flows through the flow measuring orifice and into the plenum upstream of the test stage. The air passes through the experimental compressor stage into the collector and the atmospheric exhaust system.

Instrumentation

The airflow was determined from measurements on a calibrated thin-plate orifice. The orifice temperature was obtained from an average of two Chromel-constantan thermocouples. Orifice pressures were measured by calibrated transducers. An electronic speed counter, in conjunction with a magnetic pickup, was used to measure rotative speed.

Radial surveys of flow conditions at station 1 upstream of rotor (see fig. 1) were made using two combination probes (fig. 4(a)) and two 18° wedge probes (fig. 4(b)). The combination probe measures total temperature, total pressure, and flow angle. The wedge probe measures static pressure and flow angle. Each probe was equipped with a null-balancing control system which automatically alined the probe with the flow direction. Chromel-constantan thermocouples were used to measure temperature.

Because of the close spacing between the rotor and stator (approximately 0.7 cm), no measurements were made between them. At station 3 (downstream of stator) two combination probes and two wedge probes were traversed both circumferentially and radially to obtain the distributions of pressure, temperature, and flow angle.

Static-pressure taps were installed on both inner and outer wall casings at stations 1 and 3. The circumferential location of the instrumentation at stations 1 and 3 are shown in figure 5. The estimated errors in the data, based on inherent accuracies of the instrumentation and the recording system, are as follows:

Airflow, kg/sec	±0.3
Rotative speed, rpm	±30
Flow angle, deg	±1.0
Temperature, K	±0.6
Rotor-inlet (station 1) total pressure, N/cm^2	±0.01
Rotor-inlet (station 1) static pressure, N/cm^2	±0.03
Stator-outlet (station 3) total pressure, N/cm^2	±0.17
Stator-outlet (station 3) static pressure, N/cm^2	±0.10

Test Procedure

The stage survey data were taken over a range of flows and speeds. For the 70, 90, and 100 percent of design speed, data were recorded at five or more flows from maximum to near-stall conditions. For the 50, 60, and 80 percent of design speeds, data were recorded at the near-stall flow only. Data were taken at nine radial positions for each flow point.

At each radial position the two combination probes behind the stator were traversed circumferentially to nine locations across the stator gap. The wedge static probes were set at midgap because preliminary studies showed that the static pressure across the gap was essentially constant. Values of total pressure, temperature, and flow angle were recorded at each circumferential position at station 3. At the last circumferential position, values of pressure, temperature, and flow angle were also recorded at station 1. All probes were then traversed to the next radial position, and the circumferential traverse procedure was repeated.

Calculation Procedure

Measured total pressures, static pressures, and total temperatures were corrected for Mach number and streamline slope. These corrections were based on an average calibration for the type of instrument used. Orifice airflow, rotative speed, total pressures, static pressures, and temperatures were all corrected to standard-day conditions based on the rotor-inlet condition.

The circumferential distribution of static pressure downstream of the stator was assumed to be constant for each radial position and equal to the midgap values. At each radial position averaged values of nine circumferential measurements of total pressure, total temperature, and flow angle downstream of the stator (station 3) were obtained in the following manner: The midgap static pressure was used with the local total pressure, total temperature, and flow angle to calculate the circumferential distributions of velocity, static density, and axial and tangential velocity components. These distributions are used in the circumferential mass-averaging process. The nine values of total temperature were mass averaged to obtain the circumferentially averaged stator-outlet total temperature. The nine values of total pressure were divided by the rotor-inlet total pressure and converted to corresponding isentropic temperature ratios. These ratios were mass averaged, and the resulting value converted through the isentropic-temperature-ratio - pressure-ratio relation) to an average total-pressure ratio. The average absolute velocity was obtained from the midgap static pressure, average total pressure, and total temperature. The average tangential velocity component was calculated by mass averaging the local tangential velocity (calculated from measured flow angle). The average absolute velocity and average tangential velocity component were used to calculate the average axial component. This calculation was performed for each of the two sets of probes at station 3, and the results from each set of probes were averaged to obtain single, averaged values of total pressure, total temperature, static pressure, and flow angle at each radial position. To obtain the overall performance, the radial distributions of the circumferentially averaged total tempera-

ture and total pressure were averaged by using a procedure similar to that used for averaging the circumferential distributions of these parameters.

The values of pressure, temperature, and flow angle at station 2 were obtained as follows: At each radial position total pressure and total temperature were translated along design streamlines from station 3. The mass-averaged total temperature was used as the total temperature for station 2. The arithmetic mean of the three highest total-pressure values from the circumferential distribution at station 3 was used as the total pressure at station 2. The radial distributions of static pressure and flow angle were calculated based on continuity of mass flow and radial equilibrium. Measured airflow, rotative speed, design values of streamline geometry, and annulus wall blockages were specified.

At each measuring station the integrated airflow was computed based on the survey data. The data, measured at the three measuring stations, were translated to the blade leading and trailing edges by the method presented in reference 4.

The airflow at stall was obtained in the following manner: During operation at near-stall, the sleeve valve was closed in small decrements. After each decrement the flow was obtained. The flow obtained just before stall occurred is call ed the stall flow. The pressure ratio at stall was obtained by extrapolating the total pressure obtained from the survey data to the stall flow.

RESULTS AND DISCUSSION

The results of this investigation are presented in three parts: overall performance of both rotor and stage, radial distribution of several performance parameters, and blade-element data for both rotor and stator. The overall performance data are presented in table IV. Blade-element data are presented for each overall-performance data point in tables V and VI for the rotor and stator, respectively. The abbreviations and units used for the tabular data are defined in appendix C.

Overall Performance

The overall performances for the rotor and stage are presented in figures 6 and 7, respectively. At design speed the rotor and stage achieved peak efficiencies of 0.876 and 0.840, respectively, at an airflow of 20.74 kg/sec. The respective design efficiencies were 0.877 and 0.846. The rotor and stage pressure ratios at peak efficiency conditions were 2.056 and 2.000, respectively. The design rotor and stage pressure ratios were 2.106 and 2.05, respectively. The airflow at which peak efficiency occurred is about 3 percent higher than the design flow. At the design flow rate rotor

and stage pressure ratios exceeded the design value, and the efficiencies were slightly lower than design. The maximum value of rotor efficiency of 0.93 occurred at 70 percent of design speed. At all three speed lines (70, 90, and 100 percent of design speeds speeds), the peak efficiency occurred near the maximum flow. The stage stall margin, based on conditions at stall and peak efficiency, is only 10 percent at design speed. However, at 90 percent speed the stall margin is 20 percent.

Radial Distributions

Radial distributions of several parameters for the rotor and stator are presented in figures 8 and 9 for design speed at three flow conditions: maximum, peak efficiency, and near stall. These distributions show how the blade rows operated at various spanwise locations for a given flow and the change in these parameters over the flow range. The design distributions are presented by the solid symbols.

Rotor

For the peak efficiency flow condition (20.7 kg/sec), the total-pressure ratio is less than design from the tip to approximately midspan and essentially equal to design from there to the hub. Except at 10 percent span, the distribution of efficiency is very close to the design distribution. The radial distribution of incidence angle is different than design being about 3° more than design in the tip and about 3° less than design in the hub. The deviation angle exhibited the same trend of being greater than design in the tip region and less than design in the hub region. The losses agree reasonably well with design from the tip to 70 percent span and are less than design from there to the hub.

At the near stall condition (19.6 kg/sec), the diffusion factor decreased from about 0.65 at the tip to about 0.61 at 30 percent span and remained essentially constant from there to the hub.

Stator

At the peak efficiency flow condition, the stator losses agree very closely with design values except in the region of the tip and hub. The distribution of diffusion factor is different from design, varying from about 0.6 at 5 percent span to about 0.45 at 95 percent span. The deviation angles are larger than the design values over the entire span. This can be attributed to the higher-than-design rotor-exit tangential velocities and flow angles.

At the near-stall flow condition diffusion factor and the losses were greater over the entire span than they were at the near-design flow condition. At the maximum flow condition both diffusion factor and losses are lower than the values at near-design over the entire span.

Variations with Incidence Angle

The variations of selected blade-element parameters with suction-surface incidence angle are presented in figures 10 and 11 for rotor and stator. The data are presented for the 70, 90, and 100 percent of design speeds for blade elements located at 5, 10, 15, 30, 50, 70, 85, 90, and 95 percent of span from the blade tip. Design values are represented by solid symbols, and experimental values by open symbols. The data presented are computer plotted; occasionally a data point will be omitted because it falls outside the range of the parameters shown in the figure. These data points do appear, however, in the appropriate tables in this report. In this section, the comparisons will be made between design and design speed data.

Rotor. - Meridional velocity ratio, inlet relative Mach number, deviation angle, total-loss parameter, total-loss coefficient, diffusion factor, adiabatic efficiency, total-temperature ratio, and total-pressure ratio are plotted as functions of suction-surface incidence angle in figure 10. At design speed all the rotor-blade elements operated over a rather narrow incidence angle range (less than 4°). Except at 5 percent span, the minimum loss occurred at lower than design incidence angles. The minimum losses are less than the design values.

In the hub region (85, 90, and 95 percent spans), compressor stall occurred before the design incidence was encountered. Also, the losses increased sharply as the incidence angle was decreased below that value for minimum loss.

At the high incidence angles (near-stall) all of the blade-elements operate above a pressure ratio of 2.14 and a diffusion factor of 0.6.

At design incidence angle the total-loss coefficient is somewhat larger than the design values for all elements except for the 5-percent-of-span location. However, at the design incidence angle the diffusion factor is also larger than the design values at each element. The design and experimental losses for the same value of diffusion factor are quite comparable.

Stator. - Meridional velocity ratio, inlet Mach number, deviation angle, total-loss coefficient, total-loss parameter, and diffusion factor are plotted as functions of suction surface-incidence angle in figure 11. At design speed the stator operated over a range of incidence angle of about 20° at the 5-percent-of-span element, and this range decreases to about 11° at the 95-percent-of-span element. Except at the 5 and 50 per-

cent spans, the deviation angles were nearly independent of speed. From 10 to 95 percent span, the minimum loss occurred at less than design incidence angle, and its value was approximately equal to or less than the design values. For 90 and 100 percent of design speed, diffusion factors seem, in general, to be independent of speed. At design incidence angle and speed the stator diffusion factor is equal to or slightly larger than design values.

SUMMARY OF RESULTS

This report has presented the overall and blade-element performance of a single-stage axial-flow transonic compressor that is representative of an inlet stage for an advance-core compressor. This is one of a series of stages designed to investigate the effects of aspect ratio and pressure ratio on the performance characteristics. The stage consisted of a rotor and stator with aspect ratios of 1.19 and 1.26, respectively, and a design pressure ratio of 2.05. Detailed radial surveys of the flow conditions ahead of the rotor and behind the stator, were made over the stable operating range at 70, 90, and 100 percent of design speed. This investigation yielded the following results:

1. At design speed the peak rotor and stage efficiencies were 0.876 and 0.840 and occurred at rotor and stage pressure ratios of 2.056 and 2.000, respectively. Stage peak efficiency occurred at an airflow about 3 percent higher than the design value.

2. Stall margin at design speed for this stage was 10 percent, based on flows and total-pressure ratios at peak efficiency and stall.

3. At the design-speed peak-efficiency condition, the spanwise distribution of rotor total-pressure ratio is lower than the design distribution from the tip to approximately midspan and essentially equal to design from there to hub. All rotor-blade elements operated over a 0.6 diffusion factor at near-stall conditions.

4. At the design incidence angle, the stator diffusion factor is equal to or slightly larger than design over most of the span. The experimental loss coefficient is, however, lower than the design values for all elements except at the tip.

Lewis Research Center,
National Aeronautics and Space Administration,
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505-04.

APPENDIX A

SYMBOLS

A_{an}	annulus area at rotor leading edge, m^2
A_f	frontal area at rotor leading edge, m^2
C_p	specific heat at constant pressure, 1004 J/kg K
D	diffusion factor
i_{mc}	mean incidence angle, angle between inlet air direction and line tangent to blade mean camber line at leading edge, deg
i_{ss}	suction-surface incidence angle, angle between inlet air direction and line tangent to blade suction surface at leading edge, deg
N	rotative speed, rpm
P	total pressure, N/cm^2
p	static pressure, N/cm^2
r	radius, cm
SM	stall margin
T	total temperature, K
U	wheel speed, m/sec
V	air velocity, m/sec
W	airflow, kg/sec
Z	axial distance referenced from rotor-blade-hub leading edge, cm
α_c	cone angle, deg
α_s	slope of streamline, deg
β	air angle (angle between air velocity and axial direction), deg
β'_c	relative meridional air angle based on cone angle, arctan (tan β'_m cos α_c/ cos α_s), deg
γ	ratio of specific heats
δ	ratio of rotor-inlet total pressure to standard pressure of 10.13 N/cm^2
δ^o	deviation angle, angle between exit air direction and tangent to blade mean camber line at trailing edge, deg

η	efficiency
θ	ratio of rotor-inlet total temperature to standard temperature of 288.2 K
κ_{mc}	angle between blade mean camber line and meridional plane, deg
κ_{ss}	angle between blade suction-surface camber line at leading edge and meridional plane, deg
σ	solidity, ratio of chord to spacing
$\overline{\omega}$	total-loss coefficient
$\overline{\omega}_p$	profile-loss coefficient
$\overline{\omega}_s$	shock-loss coefficient

Subscripts:

ad	adiabatic (temperature rise)
id	ideal
LE	blade leading edge
m	meridional direction
mom	momentum rise
p	polytropic
ref	reference
TE	blade trailing edge
z	axial direction
θ	tangential direction
1	instrumentation plane upstream of first rotor
2	instrumentation plane downstream of first rotor
3	instrumentation plane downstream of second stator

Superscript:

'	relative to blade

APPENDIX B

EQUATIONS

Suction-surface incidence angle:

$$i_{ss} = \left(\beta'_c\right)_{LE} - \kappa_{ss} \tag{B1}$$

Mean incidence angle:

$$i_{mc} = \left(\beta'_c\right)_{LE} - \left(\kappa_{mc}\right)_{LE} \tag{B2}$$

Deviation angle:

$$\delta^o = \left(\beta'_c\right)_{TE} - \left(\kappa_{mc}\right)_{TE} \tag{B3}$$

Diffusion factor:

$$D = 1 - \frac{V'_{TE}}{V'_{LE}} + \left|\frac{\left(rV_\theta\right)_{TE} - \left(rV_\theta\right)_{LE}}{(r_{TE} + r_{LE})\sigma(V'_{LE})}\right| \tag{B4}$$

Total-loss coefficient:

$$\overline{\omega} = \frac{\left(P'_{id}\right)_{TE} - P'_{TE}}{P'_{LE} - p_{LE}} \tag{B5}$$

Profile-loss coefficient:

$$\overline{\omega}_p = \overline{\omega} - \overline{\omega}_s \tag{B6}$$

Total-loss parameter:

$$\frac{\overline{\omega}\cos\left(\beta'_m\right)_{TE}}{2\sigma} \tag{B7}$$

Profile-loss parameter:

$$\frac{\bar{\omega}_p \cos (\beta'_m)_{TE}}{2\sigma} \tag{B8}$$

Adiabatic (temperature rise) efficiency:

$$\eta_{ad} = \frac{\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma} - 1}{\frac{T_{TE}}{T_{LE}} - 1} \tag{B9}$$

The following equations were used for calculating overall performance parameters.

Rotor total-pressure ratio:

$$\overline{(P_2/P_1)} = \left[\frac{\int_{r_h}^{r_t} (P_2/P_1)^{(\gamma-1)/\gamma} \rho V_z \, r \, dr}{\int_{r_h}^{r_t} \rho V_z \, r \, dr} \right]^{\gamma/(\gamma-1)}$$

$$= \left[\frac{\sum_{i=1}^{NR} \left(P_2/P_1\right)_i^{(\gamma-1)/\gamma} \rho_{2,i} \, V_{z2,i} \, \Delta A_{2,i}}{\sum_{i=1}^{NR} \rho_{2,i} \, V_{z2,i} \, \Delta A_{2,i}} \right]^{\gamma/(\gamma-1)} \tag{B10}$$

Stage total-pressure ratio:

$$\overline{(P_3/P_1)} = \frac{\displaystyle\int_{r_h}^{r_t} (P_3/P_1)^{(\gamma-1)/\gamma}\, \rho V_z\, r\, dr}{\displaystyle\int_{r_h}^{r_t} \rho\, V_z\, r\, dr}^{\gamma/(\gamma-1)}$$

$$= \frac{\displaystyle\sum_{i=1}^{NR} \left(P_3/P_1\right)_i^{(\gamma-1)/\gamma} \rho_{3,1}\, V_{z3,i}\, \Delta A_{3,i}}{\displaystyle\sum_{i=1}^{NR} \rho_{3,i}\, V_{z3,i}\, \Delta A_{3,i}}^{\gamma/(\gamma-1)} \qquad \text{(B11)}$$

Rotor total-temperature ratio:

$$\overline{(T_2/T_1)} = \frac{\displaystyle\int_{r_h}^{r_t} (T_2/T_1)\, \rho V_z\, r\, dr}{\displaystyle\int_{r_h}^{r_t} \rho V_z\, r\, dr} = \frac{\displaystyle\sum_{i=1}^{NR} \left(T_2/T_1\right)_i \rho_{2,i}\, V_{z2,i}\, \Delta A_{2,i}}{\displaystyle\sum_{i=1}^{NR} \rho_{2,i}\, V_{z2,i}\, \Delta A_{2,i}} \qquad \text{(B12)}$$

Rotor adiabatic efficiency:

$$\eta_{ad} = \frac{\overline{(P_2/P_1)}^{(\gamma-1)/\gamma} - 1}{\overline{(T_2/T_1)} - 1} \qquad \text{(B13)}$$

Stage total-temperature ratio:

$$\overline{(T_3/T_1)} = \frac{\int_{r_h}^{r_t} (T_3/T_1)\,\rho\,V_z\,r\,dr}{\int_{r_h}^{r_t} \rho\,V_z\,r\,dr} = \frac{\sum_{i=1}^{NR} (T_3/T_1)\,\rho_{3,i}\,V_{z3,i}\,\Delta A_{3,i}}{\sum_{i=1}^{NR} \rho_{3,i}\,V_{z3,i}\,\Delta A_{3,i}} \tag{B14}$$

Stage adiabatic efficiency:

$$\eta_{ad} = \frac{\overline{(P_3/P_1)}^{(\gamma-1)/\gamma} - 1}{\overline{(T_3/T_1)} - 1} \tag{B15}$$

Rotor-inlet mass-averaged temperature:

$$\overline{T}_1 = \frac{\int_{r_h}^{r_t} T_1\,\rho\,V_z\,r\,dr}{\int_{r_h}^{r_t} \rho V_z\,r\,dr} = \frac{\sum_{i=1}^{NR} T_{1,i}\,\rho_{1,i}\,V_{z1,i}\,\Delta A_{1,i}}{\sum_{i=1}^{NR} \rho_{1,i}\,V_{z1,i}\,\Delta A_{1,i}} \tag{B16}$$

Momentum-rise efficiency:

$$\eta_{mom} = \frac{\overline{(P_2/P_1)}^{(\gamma-1)/\gamma} - 1}{\dfrac{\int_{r_h}^{r_t} \left[\left(UV_\theta\right)_2 - \left(UV_\theta\right)_1\right]\rho\,V_z\,r\,dr}{\overline{T}_1\,C_p}} = \frac{\overline{(P_2/P_1)}^{(\gamma-1)/\gamma} - 1}{\dfrac{\sum_{i=1}^{NR} \left[\left(UV_\theta\right)_2 - \left(UV_\theta\right)_1\right]_i \rho_{2,i}\,V_{z2,i}\,\Delta A_{2,i}}{\overline{T}_1\,C_p}} \tag{B17}$$

Head rise coefficient:

$$\frac{C_p \overline{T_1}}{U_t^2}\left[\overline{(P_2/P_1)^{(\gamma-1)/\gamma}} - 1\right] \tag{B18}$$

Equivalent airflow:

$$\frac{W\sqrt{\theta}}{\delta} \tag{B19}$$

Equivalent rotative speed:

$$\frac{N}{\sqrt{\theta}} \tag{B20}$$

Airflow per unit annulus area:

$$\frac{\frac{W\sqrt{\theta}}{\delta}}{A_{an}} \tag{B21}$$

Airflow per unit frontal area:

$$\frac{\frac{W\sqrt{\theta}}{\delta}}{A_f} \tag{B22}$$

Flow coefficient:

$$\left(\frac{V_z}{U_t}\right)_{LE} \tag{B23}$$

Stall margin:

$$SM = \left[\frac{\left(\overline{P_3/P_1}\right)_{stall} \left(\frac{W\sqrt{\theta}}{\delta}\right)_{ref}}{\left(\overline{P_3/P_1}\right)_{ref} \left(\frac{W\sqrt{\theta}}{\delta}\right)_{stall}} - 1 \right] \times 100 \tag{B24}$$

Rotor polytropic efficiency:

$$\eta_p = \frac{\ln(\overline{P_2/P_1})^{(\gamma-1)/\gamma}}{\ln(\overline{T_2/T_1})} \tag{B25}$$

Stage polytropic efficiency:

$$\eta_p = \frac{\ln(\overline{P_3/P_1})^{(\gamma-1)/\gamma}}{\ln(\overline{T_3/T_1})} \tag{B26}$$

APPENDIX C

DEFINITIONS AND UNITS USED IN TABLES

ABS	absolute
AERO CHORD	aerodynamic chord, cm
AIRFLOW	equivalent airflow, kg/sec
BETAM	meridional air angle, deg
CHOKE MARGIN	ratio of actual flow area minus critical area to critical area (where local Mach number is 1)
CONE ANGLE	angle between axial direction and conical surface representing blade element, deg
DELTA INC	difference between mean camber blade angle and suction-surface blade angle at leading edge, deg
DEV	deviation angle (defined by eq. (B3)), deg
D-FACT	diffusion factor (defined by eq. (B4))
EFF	adiabatic efficiency (defined by eq. (B9))
IN	inlet (leading edge of blade)
INCIDENCE	incidence angle (suction surface defined by eq. (B1); mean surface by eq. (B2))
KIC	angle between blade mean camber line at leading edge and meridional plane, deg
KOC	angle between blade mean camber line at trailing edge and meridional plane, deg
KTC	angle between blade mean camber line at transition point and meridional plane, deg
LOSS COEFF	loss coefficient (total defined by eq. (B5) and profile by eq. (B6))
LOSS PARAM	loss parameter (total defined by eq. (B7) and profile by eq. (B8))
MERID	meridional
MERID VEL R	meridional velocity ratio
OUT	outlet (trailing edge of blade)
PERCENT SPAN	percent of blade span from tip at rotor outlet

PHISS	suction-surface camber ahead of assumed shock location, deg
PRESS	pressure, N/cm^2
PROF	profile
RADII	radius, cm
REL	relative to blade
RI	inlet radius (leading edge of blade), cm
RO	outlet radius (trailing edge of blade), cm
RP	radial position
RPM	equivalent rotative speed, rpm
SETTING ANGLE	angle between aerodynamic chord and meridional plane, deg
SOLIDITY	ratio of aerodynamic chord to blade spacing
SPEED	speed, m/sec
SS	suction surface
STREAMLINE SLOPE	slope of streamline, deg
TANG	tangential
TEMP	temperature, K
TI	thickness of blade at leading edge, cm
TM	thickness of blade at maximum thickness, cm
TO	thickness of blade at trailing edge, cm
TOT	total
TOTAL CAMBER	difference between inlet and outlet blade mean camber lines, deg
TURN RATE	ratio of change in blade angle per unit path distance for front blade segment to the change in blade angle per unit path distance for aft blade segment
VEL	velocity, m/sec
ZI	axial distance from inlet hub to blade leading edge, cm
ZMC	axial distance from inlet hub to blade maximum thickness point, cm
ZO	axial distance from inlet hub to blade trailing edge, cm
ZTC	axial distance from inlet hub to transition point, cm

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TABLE I. - DESIGN OVERALL PARAMETERS

FOR STAGE 37-37

ROTOR TOTAL PRESSURE RATIO	2.106
STAGE TOTAL PRESSURE RATIO	2.050
ROTOR TOTAL TEMPERATURE RATIO	1.270
STAGE TOTAL TEMPERATURE RATIO	1.270
ROTOR ADIABATIC EFFICIENCY	.877
STAGE ADIABATIC EFFICIENCY	.842
ROTOR POLYTROPIC EFFICIENCY	.889
STAGE POLYTROPIC EFFICIENCY	.857
ROTOR HEAD RISE COEFFICIENT	.333
STAGE HEAD RISE COEFFICIENT	.319
FLOW COEFFICIENT	.453
AIRFLOW PER UNIT FRONTAL AREA	100.950
AIRFLOW PER UNIT ANNULUS AREA	200.549
AIRFLOW	20.188
RPM	17188.700
TIP SPEED	454.136
HUB-TIP RADIUS RATIO	.70
ROTOR ASPECT RATIO	1.19
STATOR ASPECT RATIO	1.26
NUMBER OF ROTOR BLADES	36.0
NUMBER OF STATOR BLADES	46.0

TABLE II. - DESIGN BLADE-ELEMENT PARAMETERS

(a) Rotor 37

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
TIP	25.230	24.506	.0	50.7	67.4	56.3	288.2	1.301	10.14	2.106
1	24.935	24.218	.0	50.4	66.8	55.6	288.2	1.297	10.14	2.106
2	24.597	23.929	.0	50.1	66.0	54.8	288.2	1.293	10.14	2.106
3	24.254	23.641	.0	50.0	65.3	54.0	288.2	1.289	10.14	2.106
4	23.211	22.775	.0	49.1	63.3	51.6	288.2	1.277	10.14	2.106
5	21.761	21.622	.0	48.5	61.2	47.7	288.2	1.265	10.14	2.106
6	20.246	20.468	.0	48.6	59.8	42.6	288.2	1.258	10.14	2.106
7	19.030	19.603	.0	48.9	59.3	37.6	288.2	1.257	10.14	2.106
8	18.603	19.314	.0	48.8	59.3	35.7	288.2	1.256	10.14	2.106
9	18.161	19.026	.0	48.6	59.4	33.5	288.2	1.256	10.14	2.106
HUB	17.780	18.738	.0	48.3	59.6	31.3	288.2	1.255	10.14	2.106

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TIP	188.9	255.9	491.8	292.1	188.9	162.0	.0	198.1	454.1	441.1
1	192.8	256.3	488.5	289.0	192.8	163.3	.0	197.5	448.8	435.9
2	197.2	256.8	484.7	285.8	197.2	164.6	.0	197.1	442.7	430.7
3	201.1	257.5	480.7	282.1	201.1	165.7	.0	197.2	436.6	425.5
4	210.2	259.2	467.7	273.0	210.2	169.6	.0	196.0	417.8	410.0
5	215.6	263.5	447.1	259.5	215.6	174.7	.0	197.3	391.7	389.2
6	212.4	271.1	421.8	243.9	212.4	179.4	.0	203.2	364.4	368.4
7	203.4	280.0	398.4	232.6	203.4	184.2	.0	210.9	342.5	352.9
8	198.8	283.8	389.4	229.9	198.8	186.8	.0	213.6	334.9	347.7
9	193.0	288.3	379.6	228.6	193.0	190.6	.0	216.3	326.9	342.5
HUB	187.7	293.0	371.0	227.9	187.7	194.7	.0	218.9	320.0	337.3

	ABS MACH NO		REL MACH NO		MERID MACH NO		STREAMLINE SLOPE		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
TIP	.573	.690	1.493	.788	.573	.437	-14.35	-13.91	.858	1.639
1	.586	.693	1.484	.781	.586	.441	-13.21	-12.31	.847	1.642
2	.600	.695	1.475	.774	.600	.446	-11.94	-10.77	.835	1.644
3	.613	.698	1.465	.765	.613	.449	-10.76	-9.38	.824	1.634
4	.643	.707	1.431	.745	.643	.463	-7.36	-5.70	.807	1.586
5	.661	.724	1.371	.713	.661	.480	-2.45	-.96	.810	1.562
6	.650	.749	1.291	.674	.650	.496	2.67	3.51	.845	1.569
7	.621	.777	1.215	.646	.621	.511	6.94	6.56	.906	1.584
8	.605	.789	1.186	.639	.605	.520	8.51	7.39	.940	1.577
9	.586	.804	1.154	.637	.586	.531	10.24	7.99	.988	1.566
HUB	.569	.819	1.125	.637	.569	.544	11.75	8.54	1.037	1.558

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
TIP	.00	4.8	2.7	6.2	.560	.786	.214	.099	.046	.021
1	5.00	5.0	2.6	6.3	.561	.797	.202	.089	.044	.019
2	10.00	5.1	2.4	6.4	.562	.809	.191	.081	.042	.018
3	15.00	5.1	2.2	6.5	.564	.818	.182	.075	.040	.016
4	30.00	4.8	1.4	7.2	.565	.854	.148	.064	.033	.014
5	50.00	4.6	.5	8.8	.569	.894	.112	.062	.026	.014
6	70.00	5.5	.0	10.3	.576	.917	.094	.061	.022	.014
7	85.00	6.6	.0	12.2	.578	.922	.095	.070	.023	.017
8	90.00	6.8	.0	12.8	.575	.924	.096	.074	.023	.018
9	95.00	7.2	.0	13.5	.566	.927	.096	.078	.023	.019
HUB	100.00	7.5	.0	14.2	.557	.929	.096	.079	.023	.019

TABLE II. - Concluded.

(b) Stator 37

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
TIP	24.254	24.008	47.5	10.6	47.5	10.6	375.0	1.000	21.35	.972
1	23.999	23.769	47.4	10.6	47.4	10.6	373.7	1.000	21.35	.973
2	23.742	23.545	47.3	10.6	47.3	10.6	372.6	1.000	21.35	.974
3	23.483	23.318	47.3	10.6	47.3	10.6	371.6	1.000	21.35	.975
4	22.694	22.630	46.7	10.8	46.7	10.8	368.1	1.000	21.35	.976
5	21.615	21.684	46.3	11.1	46.3	11.1	364.5	1.000	21.35	.975
6	20.519	20.726	46.8	11.6	46.8	11.6	362.6	1.000	21.35	.972
7	19.681	19.996	47.6	12.0	47.6	12.0	362.2	1.000	21.35	.969
8	19.398	19.751	48.0	12.2	48.0	12.2	362.0	1.000	21.35	.968
9	19.112	19.505	48.3	12.3	48.3	12.3	361.8	1.000	21.35	.966
HUB	18.837	19.238	48.6	12.5	48.6	12.5	361.6	1.000	21.35	.964

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
TIP	271.3	187.1	271.3	187.1	183.2	183.9	200.1	34.3	.0	.0
1	270.7	189.0	270.7	189.0	183.1	185.8	199.3	34.6	.0	.0
2	270.2	190.7	270.2	190.7	183.1	187.5	198.6	35.0	.0	.0
3	270.1	192.1	270.1	192.1	183.2	188.9	198.5	35.3	.0	.0
4	270.4	194.7	270.4	194.7	185.5	191.3	196.7	36.4	.0	.0
5	272.8	196.4	272.8	196.4	188.4	192.7	197.4	38.0	.0	.0
6	278.1	197.4	278.1	197.4	190.4	193.3	202.7	39.7	.0	.0
7	284.2	197.8	284.2	197.8	191.5	193.5	210.0	41.2	.0	.0
8	286.4	197.9	286.4	197.9	191.7	193.4	212.7	41.7	.0	.0
9	288.4	198.0	288.4	198.0	191.9	193.4	215.3	42.2	.0	.0
HUB	290.4	198.1	290.4	198.1	192.1	193.4	217.8	42.8	.0	.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	STREAMLINE SLOPE IN	STREAMLINE SLOPE OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
TIP	.736	.494	.736	.494	.497	.485	-8.12	-3.99	1.004	1.300
1	.735	.500	.735	.500	.498	.491	-7.16	-3.43	1.015	1.292
2	.735	.506	.735	.506	.498	.497	-6.22	-2.92	1.024	1.286
3	.736	.510	.736	.510	.499	.501	-5.34	-2.42	1.031	1.284
4	.741	.520	.741	.520	.508	.511	-2.91	-1.04	1.031	1.271
5	.752	.527	.752	.527	.519	.517	.28	.64	1.023	1.271
6	.771	.532	.771	.532	.528	.521	3.53	2.34	1.015	1.295
7	.790	.533	.790	.533	.533	.522	5.79	3.80	1.010	1.327
8	.797	.534	.797	.534	.534	.522	6.38	4.36	1.009	1.336
9	.804	.534	.804	.534	.535	.522	6.76	4.98	1.008	1.343
HUB	.810	.534	.810	.534	.536	.522	7.08	5.67	1.007	1.349

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
TIP	.00	4.6	-3.2	9.2	.548	.000	.096	.096	.036	.036
1	5.00	4.5	-3.0	9.2	.537	.000	.089	.089	.034	.034
2	10.00	4.4	-2.9	9.1	.527	.000	.085	.085	.032	.032
3	15.00	4.4	-2.7	9.1	.519	.000	.083	.083	.031	.031
4	30.00	4.3	-2.1	8.8	.502	.000	.078	.078	.029	.029
5	50.00	4.2	-1.3	8.6	.493	.000	.081	.081	.029	.029
6	70.00	3.9	-.7	8.7	.497	.000	.086	.086	.030	.030
7	85.00	3.7	-.3	9.0	.508	.000	.091	.091	.031	.031
8	90.00	3.7	-.2	9.1	.512	.000	.094	.094	.032	.032
9	95.00	3.6	-.0	9.2	.516	.000	.097	.097	.033	.032
HUB	100.00	3.5	.1	9.3	.519	.000	.101	.100	.033	.033

TABLE III. - BLADE GEOMETRY

(a) Rotor 37

RP	PERCENT SPAN	RADII RI	RADII RO	BLADE ANGLES KIC	BLADE ANGLES KTC	BLADE ANGLES KOC	DELTA INC	CONE ANGLE
TIP	0.	25.230	24.506	62.53	62.83	49.98	2.10	-15.233
1	5.	24.935	24.218	61.66	61.86	49.07	2.39	-14.582
2	10.	24.597	23.929	60.76	60.86	48.18	2.69	-13.139
3	15.	24.254	23.641	60.07	60.09	47.34	2.94	-11.768
4	30.	23.211	22.775	58.48	58.09	44.22	3.40	-7.804
5	50.	21.761	21.622	56.53	54.49	38.87	4.19	-2.276
6	70.	20.246	20.468	54.24	50.48	32.37	5.49	3.311
7	85.	19.030	19.603	52.67	47.60	25.28	6.54	8.010
8	90.	18.603	19.314	52.37	46.87	22.68	6.83	9.728
9	95.	18.161	19.026	52.18	46.39	19.75	7.16	11.584
HUB	100.	17.780	18.738	52.04	46.03	16.75	7.44	12.602

RP	BLADE THICKNESSES TI	BLADE THICKNESSES TM	BLADE THICKNESSES TO	AXIAL DIMENSIONS ZI	AXIAL DIMENSIONS ZMC	AXIAL DIMENSIONS ZTC	AXIAL DIMENSIONS ZO
TIP	.025	.175	.025	.713	2.430	2.399	3.372
1	.026	.186	.026	.665	2.390	2.372	3.424
2	.028	.199	.028	.615	2.346	2.334	3.475
3	.029	.211	.029	.574	2.304	2.280	3.520
4	.032	.250	.033	.466	2.225	2.094	3.644
5	.037	.303	.038	.317	2.164	1.928	3.822
6	.042	.360	.043	.176	2.069	1.773	4.015
7	.047	.407	.047	.079	2.010	1.733	4.153
8	.048	.425	.049	.048	1.984	1.660	4.198
9	.050	.443	.050	.021	1.957	1.591	4.241
HUB	.051	.458	.051	.000	1.933	1.530	4.283

RP	AERO CHORD	SETTING ANGLE	TOTAL CAMBER	SOLIDITY	TURN RATE	PHISS	CHOKE MARGIN
TIP	5.592	60.63	12.54	1.288	-.011	1.61	.030
1	5.609	59.81	12.59	1.308	-.008	2.08	.033
2	5.603	58.54	12.58	1.323	-.004	2.54	.035
3	5.598	57.65	12.73	1.339	-.001	2.81	.033
4	5.583	55.11	14.26	1.391	.022	3.18	.033
5	5.570	51.16	17.66	1.471	.128	5.15	.041
6	5.571	46.54	21.87	1.568	.239	7.97	.052
7	5.591	42.82	27.39	1.658	.269	10.43	.046
8	5.604	41.48	29.69	1.693	.286	10.94	.047
9	5.622	40.17	32.42	1.732	.291	11.38	.050
HUB	5.627	38.92	35.29	1.766	.292	11.73	.053

TABLE III. - Concluded.

(b) Stator 37

RP	PERCENT SPAN	RADII RI	RO	BLADE ANGLES KIC	KTC	KOC	DELTA INC	CONE ANGLE
TIP	0.	24.254	24.008	43.21	26.44	1.33	7.72	-3.569
1	5.	23.999	23.769	43.11	26.57	1.38	7.50	-3.351
2	10.	23.742	23.545	43.04	26.69	1.42	7.28	-2.895
3	15.	23.483	23.318	43.02	26.80	1.48	7.06	-2.433
4	30.	22.694	22.630	42.38	26.92	1.93	6.39	-.966
5	50.	21.615	21.684	42.12	27.37	2.54	5.52	1.050
6	70.	20.519	20.726	42.87	28.27	2.90	4.67	3.255
7	85.	19.681	19.996	43.97	29.37	3.02	4.04	5.074
8	90.	19.398	19.751	44.35	29.84	3.04	3.83	5.733
9	95.	19.112	19.505	44.73	30.33	3.08	3.62	6.453
HUB	100.	18.837	19.238	45.10	30.82	3.11	3.41	6.648

RP	BLADE THICKNESSES TI	TM	TO	AXIAL DIMENSIONS ZI	ZMC	ZTC	ZO
TIP	.026	.324	.026	4.684	6.509	6.112	8.635
1	.026	.315	.026	4.694	6.513	6.110	8.623
2	.025	.306	.025	4.703	6.517	6.108	8.612
3	.025	.297	.025	4.713	6.521	6.108	8.600
4	.025	.270	.025	4.737	6.533	6.098	8.565
5	.024	.234	.024	4.778	6.546	6.094	8.517
6	.024	.200	.024	4.836	6.555	6.113	8.469
7	.023	.174	.023	4.889	6.561	6.137	8.433
8	.023	.166	.023	4.908	6.563	6.145	8.419
9	.023	.158	.023	4.929	6.565	6.155	8.406
HUB	.023	.150	.023	4.949	6.567	6.165	8.392

RP	AERO CHORD	SETTING ANGLE	TOTAL CAMBER	SOLIDITY	TURN RATE	PHISS	CHOKE MARGIN
TIP	4.273	22.21	41.88	1.296	1.005	22.90	.190
1	4.250	22.24	41.73	1.303	.994	22.50	.188
2	4.227	22.29	41.61	1.309	.993	22.11	.187
3	4.205	22.35	41.54	1.316	.976	21.78	.186
4	4.138	22.34	40.45	1.337	.961	20.32	.179
5	4.049	22.64	39.58	1.369	.939	18.80	.170
6	3.963	23.39	39.97	1.407	.905	17.97	.161
7	3.900	24.28	40.95	1.439	.860	17.51	.155
8	3.880	24.63	41.31	1.451	.837	17.26	.153
9	3.859	25.00	41.66	1.463	.812	16.98	.151
HUB	3.834	25.36	41.99	1.474	.787	16.69	.149

TABLE IV. - OVERALL PERFORMANCE FOR STAGE 37

(a) 100 Percent of design speed

Parameters	Reading				
	4193	4192	4182	4188	4187
ROTOR TOTAL PRESSURE RATIO	1.785	1.917	2.056	2.157	2.196
STATOR TOTAL PRESSURE RATIO	0.983	0.980	0.973	0.963	0.953
ROTOR TOTAL TEMPERATURE RATIO	1.214	1.237	1.261	1.283	1.296
STATOR TOTAL TEMPERATURE RATIO	1.000	1.000	1.000	1.000	1.000
ROTOR ADIABATIC EFFICIENCY	0.842	0.862	0.876	0.867	0.852
ROTOR MOMENTUM-RISE EFFICIENCY	0.840	0.859	0.867	0.863	0.848
ROTOR HEAD-RISE COEFFICIENT	0.306	0.356	0.402	0.440	0.458
FLOW COEFFICIENT	0.406	0.405	0.401	0.393	0.373
AIRFLOW PER UNIT FRONTAL AREA	104.68	104.15	103.73	102.15	98.03
AIRFLOW PER UNIT ANNULUS AREA	207.95	206.90	206.06	202.94	194.74
AIRFLOW AT ORIFICE	20.93	20.83	20.74	20.43	19.60
AIRFLOW AT ROTOR INLET	20.82	20.75	20.70	20.36	19.56
AIRFLOW AT ROTOR OUTLET	20.95	20.84	20.76	20.45	19.62
AIRFLOW AT STATOR OUTLET	19.91	19.76	19.89	19.10	18.11
ROTATIVE SPEED	17196.8	17169.3	17254.8	17229.7	17203.6
PERCENT OF DESIGN SPEED	100.0	99.9	100.4	100.2	100.1
Compressor performance					
STAGE TOTAL PRESSURE RATIO	1.753	1.879	2.000	2.078	2.093
STAGE TOTAL TEMPERATURE RATIO	1.214	1.237	1.261	1.283	1.296
STAGE ADIABATIC EFFICIENCY	0.814	0.834	0.840	0.821	0.793

(b) 90 Percent of design speed

Parameters	Reading				
	4209	4208	4207	4205	4204
ROTOR TOTAL PRESSURE RATIO	1.636	1.775	1.853	1.896	1.909
STATOR TOTAL PRESSURE RATIO	0.983	0.986	0.981	0.974	0.968
ROTOR TOTAL TEMPERATURE RATIO	1.170	1.194	1.213	1.228	1.236
STATOR TOTAL TEMPERATURE RATIO	1.000	1.000	1.000	1.000	1.000
ROTOR ADIABATIC EFFICIENCY	0.889	0.916	0.904	0.879	0.860
ROTOR MOMENTUM-RISE EFFICIENCY	0.888	0.916	0.905	0.878	0.858
ROTOR HEAD-RISE COEFFICIENT	0.305	0.369	0.405	0.426	0.433
FLOW COEFFICIENT	0.416	0.413	0.395	0.369	0.353
AIRFLOW PER UNIT FRONTAL AREA	98.70	98.05	94.76	90.04	86.95
AIRFLOW PER UNIT ANNULUS AREA	196.07	194.79	188.26	178.87	172.73
AIRFLOW AT ORIFICE	19.74	19.61	18.95	18.01	17.39
AIRFLOW AT ROTOR INLET	19.67	19.53	18.89	17.91	17.26
AIRFLOW AT ROTOR OUTLET	19.75	19.62	18.96	18.02	17.40
AIRFLOW AT STATOR OUTLET	18.76	18.58	17.93	16.86	16.08
ROTATIVE SPEED	15484.7	15469.6	15468.0	15481.9	15492.8
PERCENT OF DESIGN SPEED	90.1	90.0	90.0	90.1	90.1
Compressor performance					
STAGE TOTAL PRESSURE RATIO	1.607	1.751	1.819	1.847	1.847
STAGE TOTAL TEMPERATURE RATIO	1.170	1.194	1.213	1.228	1.236
STAGE ADIABATIC EFFICIENCY	0.855	0.893	0.876	0.841	0.812

TABLE IV. - Continued.

(c) 80 Percent of design speed

Parameters	Reading 4194
ROTOR TOTAL PRESSURE RATIO	1.653
STATOR TOTAL PRESSURE RATIO	0.984
ROTOR TOTAL TEMPERATURE RATIO	1.178
STATOR TOTAL TEMPERATURE RATIO	1.000
ROTOR ADIABATIC EFFICIENCY	0.867
ROTOR MOMENTUM-RISE EFFICIENCY	0.864
ROTOR HEAD-RISE COEFFICIENT	0.399
FLOW COEFFICIENT	0.346
AIRFLOW PER UNIT FRONTAL AREA	76.98
AIRFLOW PER UNIT ANNULUS AREA	152.92
AIRFLOW AT ORIFICE	15.39
AIRFLOW AT ROTOR INLET	15.35
AIRFLOW AT ROTOR OUTLET	15.40
AIRFLOW AT STATOR OUTLET	14.49
ROTATIVE SPEED	13756.7
PERCENT OF DESIGN SPEED	80.0
Compressor performance	
STAGE TOTAL PRESSURE RATIO	1.626
STAGE TOTAL TEMPERATURE RATIO	1.178
STAGE ADIABATIC EFFICIENCY	0.838

(d) 70 Percent of design speed

Parameters	Reading					
	4202	4203	4201	4198	4196	4195
ROTOR TOTAL PRESSURE RATIO	1.308	1.345	1.382	1.407	1.431	1.442
STATOR TOTAL PRESSURE RATIO	0.973	0.987	0.992	0.994	0.993	0.989
ROTOR TOTAL TEMPERATURE RATIO	1.086	1.095	1.106	1.113	1.122	1.129
STATOR TOTAL TEMPERATURE RATIO	1.000	1.000	1.000	1.000	1.000	1.000
ROTOR ADIABATIC EFFICIENCY	0.925	0.932	0.916	0.906	0.884	0.854
ROTOR MOMENTUM-RISE EFFICIENCY	0.927	0.933	0.919	0.905	0.883	0.854
ROTOR HEAD-RISE COEFFICIENT	0.248	0.278	0.307	0.327	0.346	0.356
FLOW COEFFICIENT	0.418	0.410	0.394	0.378	0.358	0.333
AIRFLOW PER UNIT FRONTAL AREA	81.26	79.68	77.22	74.55	70.98	66.52
AIRFLOW PER UNIT ANNULUS AREA	161.44	158.29	153.41	148.10	141.02	132.14
AIRFLOW AT ORIFICE	16.25	15.93	15.44	14.91	14.19	13.30
AIRFLOW AT ROTOR INLET	16.17	15.86	15.38	14.81	14.11	13.24
AIRFLOW AT ROTOR OUTLET	16.25	15.94	15.45	14.91	14.20	13.31
AIRFLOW AT STATOR OUTLET	15.45	15.11	14.60	14.05	13.38	12.54
ROTATIVE SPEED	12046.2	12016.4	12044.7	12018.3	12036.1	12038.9
PERCENT OF DESIGN SPEED	70.1	69.9	70.1	69.9	70.0	70.0
Compressor performance						
STAGE TOTAL PRESSURE RATIO	1.273	1.327	1.372	1.398	1.420	1.427
STAGE TOTAL TEMPERATURE RATIO	1.086	1.095	1.106	1.113	1.122	1.129
STAGE ADIABATIC EFFICIENCY	0.826	0.886	0.893	0.889	0.866	0.829

TABLE IV. - Concluded.

(e) 60 Percent of design speed

Parameters	Reading 4215
ROTOR TOTAL PRESSURE RATIO	1.305
STATOR TOTAL PRESSURE RATIO	0.992
ROTOR TOTAL TEMPERATURE RATIO	1.093
STATOR TOTAL TEMPERATURE RATIO	1.000
ROTOR ADIABATIC EFFICIENCY	0.848
ROTOR MOMENTUM-RISE EFFICIENCY	0.847
ROTOR HEAD-RISE COEFFICIENT	0.337
FLOW COEFFICIENT	0.318
AIRFLOW PER UNIT FRONTAL AREA	55.26
AIRFLOW PER UNIT ANNULUS AREA	109.78
AIRFLOW AT ORIFICE	11.05
AIRFLOW AT ROTOR INLET	10.99
AIRFLOW AT ROTOR OUTLET	11.05
AIRFLOW AT STATOR OUTLET	10.39
ROTATIVE SPEED	10307.0
PERCENT OF DESIGN SPEED	60.0
Compressor performance	
STAGE TOTAL PRESSURE RATIO	1.295
STAGE TOTAL TEMPERATURE RATIO	1.093
STAGE ADIABATIC EFFICIENCY	0.822

(f) 50 Percent of design speed

Parameters	Reading 4218
ROTOR TOTAL PRESSURE RATIO	1.202
STATOR TOTAL PRESSURE RATIO	0.995
ROTOR TOTAL TEMPERATURE RATIO	1.064
STATOR TOTAL TEMPERATURE RATIO	1.000
ROTOR ADIABATIC EFFICIENCY	0.848
ROTOR MOMENTUM-RISE EFFICIENCY	0.848
ROTOR HEAD-RISE COEFFICIENT	0.323
FLOW COEFFICIENT	0.314
AIRFLOW PER UNIT FRONTAL AREA	45.98
AIRFLOW PER UNIT ANNULUS AREA	91.18
AIRFLOW AT ORIFICE	9.18
AIRFLOW AT ROTOR INLET	9.13
AIRFLOW AT ROTOR OUTLET	9.18
AIRFLOW AT STATOR OUTLET	8.61
ROTATIVE SPEED	8592.5
PERCENT OF DESIGN SPEED	50.0
Compressor performance	
STAGE TOTAL PRESSURE RATIO	1.197
STAGE TOTAL TEMPERATURE RATIO	1.064
STAGE ADIABATIC EFFICIENCY	0.826

TABLE V. - BLADE-ELEMENT DATA AT BLADE EDGES FOR ROTOR 37

(a) 100 Percent of design speed; reading 4193

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.935	24.216	0.0	39.9	68.8	60.5	288.3	1.211	9.74	1.654
2	24.597	23.929	0.0	38.5	65.0	57.8	287.8	1.214	10.14	1.651
3	24.254	23.640	-0.0	37.3	64.2	55.9	288.3	1.213	10.15	1.698
4	23.211	22.776	-0.0	36.2	61.8	52.4	288.3	1.209	10.14	1.748
5	21.760	21.620	0.0	37.4	59.4	47.5	288.2	1.215	10.16	1.809
6	20.246	20.467	-0.0	38.3	57.8	41.9	288.1	1.219	10.16	1.875
7	19.030	19.604	-0.0	38.7	56.9	39.4	288.0	1.212	10.16	1.827
8	18.603	19.314	-0.0	39.3	56.7	38.2	288.1	1.212	10.16	1.805
9	18.161	19.027	-0.0	40.0	57.0	36.5	288.2	1.215	10.07	1.812

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	174.4	218.1	481.2	339.7	174.4	167.3	0.0	139.9	448.5	435.6
2	206.1	230.9	488.4	339.0	206.1	180.6	0.0	143.9	442.8	430.8
3	211.4	239.1	485.3	339.0	211.4	190.1	-0.0	145.1	436.8	425.8
4	224.5	250.4	474.5	331.1	224.5	202.1	-0.0	147.9	418.0	410.2
5	231.5	264.2	455.4	310.9	231.5	210.0	0.0	160.4	392.2	389.7
6	229.3	278.4	430.8	293.4	229.3	218.3	-0.0	172.7	364.7	368.6
7	223.1	278.9	409.0	281.6	223.1	217.6	-0.0	174.5	342.8	353.1
8	220.2	279.7	400.8	275.7	220.2	216.5	-0.0	177.1	334.9	347.7
9	212.4	283.4	390.1	270.1	212.4	217.1	-0.0	182.2	327.2	342.8

	ABS MACH NO		REL MACH NO		MERID MACH NO			MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT		VEL R	MACH NO
1	0.526	0.603	1.452	0.939	0.526	0.463		0.959	1.678
2	0.629	0.641	1.492	0.941	0.629	0.501		0.876	1.628
3	0.647	0.666	1.484	0.944	0.647	0.529		0.899	1.616
4	0.690	0.701	1.459	0.927	0.690	0.566		0.900	1.562
5	0.714	0.742	1.405	0.873	0.714	0.590		0.907	1.537
6	0.707	0.785	1.328	0.828	0.707	0.616		0.952	1.537
7	0.686	0.790	1.257	0.797	0.686	0.616		0.976	1.541
8	0.676	0.792	1.230	0.781	0.676	0.613		0.983	1.525
9	0.650	0.803	1.193	0.765	0.650	0.615		1.022	1.514

	PERCENT	INCIDENCE		DEV	D FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	7.0	4.6	11.2	0.404	0.734	0.205	0.075	0.039	0.014
2	10.00	4.2	1.5	9.4	0.416	0.720	0.213	0.089	0.043	0.018
3	15.00	4.0	1.1	8.3	0.412	0.766	0.181	0.061	0.038	0.013
4	30.00	3.3	-0.1	8.0	0.413	0.827	0.137	0.034	0.030	0.007
5	50.00	2.9	-1.3	8.6	0.437	0.860	0.121	0.032	0.028	0.007
6	70.00	3.6	-1.9	9.5	0.447	0.898	0.098	0.021	0.023	0.005
7	85.00	4.2	-2.3	14.0	0.442	0.886	0.115	0.047	0.027	0.011
8	90.00	4.2	-2.6	15.4	0.445	0.867	0.137	0.077	0.032	0.018
9	95.00	4.7	-2.4	16.4	0.446	0.862	0.149	0.096	0.035	0.022

TABLE V. - Continued.

(b) 100 Percent of design speed; reading 4192

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	46.0	68.7	59.8	288.4	1.245	9.77	1.818
2	24.597	23.929	-0.0	44.4	65.2	57.2	287.9	1.246	10.14	1.807
3	24.254	23.640	-0.0	42.8	64.3	55.5	288.3	1.241	10.15	1.841
4	23.211	22.776	-0.0	40.9	61.9	52.2	288.4	1.232	10.14	1.878
5	21.760	21.620	-0.0	42.0	59.6	47.3	288.0	1.237	10.16	1.926
6	20.246	20.467	-0.0	42.8	58.0	41.2	288.0	1.240	10.16	1.979
7	19.030	19.604	-0.0	42.3	57.1	37.6	288.2	1.232	10.16	1.968
8	18.603	19.314	0.0	42.7	56.8	35.6	288.0	1.234	10.16	1.971
9	18.161	19.027	0.0	43.0	57.1	32.9	288.1	1.238	10.07	2.003

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	174.6	227.0	480.6	314.2	174.6	157.8	-0.0	163.2	447.8	434.9
2	204.7	237.6	487.2	313.5	204.7	169.6	-0.0	166.4	442.1	430.1
3	209.8	243.0	483.8	315.3	209.8	178.4	-0.0	165.0	436.0	424.9
4	222.9	251.2	473.2	310.0	222.9	189.8	-0.0	164.6	417.5	409.7
5	229.7	263.7	453.8	288.9	229.7	195.9	-0.0	176.5	391.4	388.9
6	228.0	278.6	429.8	271.8	228.0	204.5	-0.0	189.2	364.3	368.2
7	221.7	283.6	407.8	264.8	221.7	209.8	-0.0	190.8	342.2	352.5
8	218.9	288.4	399.7	260.6	218.9	212.0	0.0	195.6	334.4	347.2
9	211.0	296.2	388.9	257.9	211.0	216.5	0.0	202.1	326.7	342.3

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.527	0.620	1.450	0.858	0.527	0.431	0.904	1.675
2	0.625	0.652	1.487	0.860	0.625	0.465	0.829	1.627
3	0.641	0.669	1.479	0.868	0.641	0.491	0.850	1.615
4	0.685	0.696	1.454	0.859	0.685	0.526	0.852	1.561
5	0.708	0.733	1.399	0.804	0.708	0.545	0.853	1.537
6	0.703	0.779	1.324	0.760	0.703	0.572	0.897	1.537
7	0.681	0.797	1.252	0.744	0.681	0.590	0.946	1.541
8	0.672	0.812	1.227	0.734	0.672	0.597	0.968	1.526
9	0.645	0.835	1.189	0.727	0.645	0.610	1.026	1.516

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	6.9	4.5	10.5	0.474	0.762	0.207	0.079	0.040	0.015
2	10.00	4.3	1.6	8.8	0.484	0.748	0.216	0.092	0.044	0.019
3	15.00	4.2	1.2	8.0	0.474	0.790	0.180	0.061	0.038	0.013
4	30.00	3.4	-0.0	7.9	0.469	0.851	0.130	0.027	0.029	0.006
5	50.00	3.1	-1.1	8.4	0.495	0.870	0.122	0.034	0.028	0.008
6	70.00	3.7	-1.8	8.8	0.509	0.898	0.105	0.028	0.025	0.007
7	85.00	4.3	-2.2	12.3	0.494	0.921	0.086	0.019	0.021	0.005
8	90.00	4.3	-2.5	12.7	0.495	0.916	0.095	0.035	0.023	0.008
9	95.00	4.8	-2.3	12.9	0.490	0.922	0.093	0.041	0.023	0.010

TABLE V. - Continued.

(c) 100 Percent of design speed; reading 4182

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	0.0	50.6	69.1	59.4	288.5	1.274	9.74	1.992
2	24.597	23.929	0.0	48.9	65.4	56.9	287.8	1.274	10.14	1.959
3	24.254	23.640	0.0	45.9	64.5	55.5	288.3	1.261	10.15	1.986
4	23.211	22.776	0.0	45.4	62.2	51.3	288.3	1.259	10.14	2.014
5	21.760	21.620	0.0	47.1	59.8	46.3	288.1	1.262	10.16	2.067
6	20.246	20.467	0.0	46.9	58.1	39.5	288.1	1.264	10.16	2.112
7	19.030	19.604	0.0	45.5	57.2	36.4	288.1	1.251	10.17	2.095
8	18.603	19.314	0.0	46.0	57.0	34.0	288.1	1.254	10.16	2.102
9	18.161	19.027	0.0	46.5	57.3	30.7	288.1	1.261	10.07	2.147

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	171.3	236.0	480.4	294.7	171.3	149.9	0.0	182.2	448.8	435.9
2	203.2	244.4	487.4	294.7	203.2	160.7	0.0	184.1	443.1	431.1
3	208.1	246.2	483.8	302.0	208.1	171.2	0.0	176.9	436.8	425.7
4	221.1	258.7	473.6	290.8	221.1	181.8	0.0	184.1	418.9	411.0
5	229.2	270.5	455.2	266.4	229.2	184.1	0.0	198.2	393.4	390.9
6	228.4	286.4	432.0	253.9	228.4	195.8	0.1	209.0	366.7	370.7
7	222.1	288.8	410.1	251.4	222.1	202.4	0.0	206.0	344.8	355.2
8	219.3	294.5	402.1	246.7	219.3	204.5	0.1	212.0	337.1	350.0
9	211.4	304.0	391.2	243.4	211.4	209.2	0.0	220.5	329.2	344.9

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.516	0.638	1.448	0.797	0.516	0.406	0.875	1.686
2	0.620	0.664	1.487	0.801	0.620	0.437	0.791	1.634
3	0.636	0.673	1.477	0.825	0.636	0.468	0.823	1.621
4	0.679	0.711	1.454	0.799	0.679	0.500	0.822	1.571
5	0.706	0.746	1.403	0.735	0.706	0.508	0.803	1.546
6	0.704	0.795	1.331	0.704	0.704	0.543	0.857	1.548
7	0.682	0.807	1.260	0.702	0.682	0.565	0.911	1.553
8	0.673	0.824	1.234	0.690	0.673	0.572	0.933	1.538
9	0.647	0.851	1.197	0.682	0.647	0.586	0.990	1.526

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	7.3	4.9	10.1	0.529	0.793	0.199	0.067	0.039	0.013
2	10.00	4.5	1.8	8.5	0.536	0.773	0.213	0.087	0.044	0.018
3	15.00	4.4	1.4	7.9	0.511	0.831	0.156	0.035	0.033	0.007
4	30.00	3.7	0.3	7.0	0.524	0.856	0.137	0.032	0.031	0.007
5	50.00	3.2	-0.9	7.4	0.562	0.881	0.121	0.030	0.028	0.007
6	70.00	3.8	-1.7	7.2	0.567	0.902	0.108	0.028	0.027	0.007
7	85.00	4.5	-2.1	11.0	0.541	0.938	0.071	0.001	0.017	0.000
8	90.00	4.5	-2.3	11.2	0.545	0.931	0.092	0.019	0.020	0.005
9	95.00	5.0	-2.2	10.7	0.544	0.936	0.082	0.026	0.020	0.006

TABLE V. - Continued.

(d) 100 Percent of design speed; reading 4188

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	54.5	69.6	57.5	288.8	1.309	9.77	2.138
2	24.597	23.929	0.0	52.9	66.0	55.5	288.0	1.306	10.14	2.088
3	24.254	23.640	-0.0	51.7	65.2	54.0	288.1	1.300	10.15	2.105
4	23.211	22.776	-0.0	49.5	62.9	50.3	288.3	1.286	10.13	2.131
5	21.760	21.620	-0.0	49.4	60.5	44.3	288.2	1.285	10.16	2.186
6	20.246	20.467	-0.0	48.7	58.8	39.1	288.1	1.274	10.16	2.183
7	19.030	19.604	0.0	48.5	57.8	35.1	287.9	1.266	10.16	2.161
8	18.603	19.314	-0.0	48.9	57.6	32.6	288.0	1.268	10.16	2.167
9	18.161	19.027	-0.0	49.1	57.9	29.4	288.0	1.272	10.07	2.208

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	167.3	253.2	479.8	273.5	167.3	147.0	-0.0	206.1	449.7	436.8
2	197.1	257.6	485.4	274.2	197.1	155.2	0.0	205.5	443.6	431.6
3	202.3	260.6	482.4	274.7	202.3	161.4	-0.0	204.5	437.9	426.8
4	214.0	266.2	470.1	270.5	214.0	172.7	-0.0	202.5	418.6	410.8
5	222.2	279.9	451.0	254.5	222.2	182.2	-0.0	212.4	392.5	390.0
6	221.5	286.8	427.4	244.0	221.5	189.3	-0.0	215.5	365.5	369.5
7	216.0	291.5	405.8	235.9	216.0	193.1	0.0	218.4	343.5	353.9
8	213.3	296.8	397.8	231.9	213.3	195.3	-0.0	223.5	335.7	348.6
9	205.4	305.1	386.6	229.3	205.4	199.7	-0.0	230.7	327.6	343.2

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.503	0.679	1.444	0.733	0.503	0.394	0.879	1.699
2	0.600	0.694	1.477	0.738	0.600	0.418	0.788	1.648
3	0.617	0.704	1.471	0.742	0.617	0.436	0.798	1.637
4	0.655	0.725	1.439	0.737	0.655	0.470	0.807	1.582
5	0.682	0.767	1.386	0.697	0.682	0.499	0.820	1.554
6	0.680	0.792	1.313	0.674	0.680	0.523	0.854	1.555
7	0.662	0.810	1.244	0.656	0.662	0.537	0.894	1.560
8	0.653	0.826	1.218	0.645	0.653	0.543	0.915	1.545
9	0.627	0.851	1.180	0.639	0.627	0.557	0.973	1.534

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	7.8	5.4	8.2	0.592	0.785	0.225	0.091	0.046	0.019
2	10.00	5.2	2.5	7.1	0.593	0 765	0.239	0.112	0.051	0.024
3	15.00	5.1	2.1	6.5	0.587	0.790	0.214	0.090	0.047	0.020
4	30.00	4.4	1.0	6.0	0.578	0.844	0.161	0.056	0.037	0.013
5	50.00	4.0	-0.2	5.4	0.595	0.878	0.133	0.043	0.032	0.011
6	70.00	4.5	-1.0	6.8	0.591	0.913	0.101	0.022	0.025	0.006
7	85.00	5.1	-1.4	9.7	0.583	0.927	0.090	0.020	0.022	0.005
8	90.00	5.1	-1.7	9.8	0.586	0.923	0.097	0.035	0.024	0.009
9	95.00	5.6	-1.5	9.4	0.583	0.933	0.091	0.035	0.023	0.009

TABLE V. - Continued.

(e) 100 Percent of design speed; reading 4187

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	0.0	59.1	71.0	57.9	288.5	1.334	9.80	2.200
2	24.597	23.929	-0.0	57.6	67.7	55.9	287.8	1.330	10.14	2.144
3	24.254	23.640	-0.0	56.0	66.9	54.2	288.3	1.321	10.14	2.154
4	23.211	22.776	-0.0	52.6	64.8	49.6	288.5	1.305	10.12	2.198
5	21.760	21.620	0.0	51.2	62.1	43.5	288.1	1.296	10.16	2.231
6	20.246	20.467	0.0	50.5	60.0	39.4	288.1	1.279	10.16	2.196
7	19.030	19.604	-0.0	50.3	58.9	34.7	287.9	1.272	10.16	2.173
8	18.603	19.314	0.0	50.3	58.7	32.3	288.0	1.274	10.16	2.187
9	18.161	19.027	-0.0	50.5	59.0	28.8	288.1	1.278	10.09	2.223

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	155.0	260.4	475.1	251.2	155.0	133.7	0.0	223.5	449.1	436.2
2	181.5	263.2	478.4	251.7	181.5	141.1	-0.0	222.2	442.6	430.6
3	186.4	265.1	474.7	253.7	186.4	148.3	-0.0	219.7	436.6	425.5
4	196.4	272.0	461.9	254.9	196.4	165.2	-0.0	216.1	418.0	410.2
5	207.5	283.4	443.2	244.5	207.5	177.5	0.0	221.0	391.7	389.1
6	210.7	285.1	421.4	234.5	210.7	181.3	0.0	220.1	364.9	368.9
7	206.8	291.5	400.6	226.5	206.8	186.2	-0.0	224.3	343.0	353.4
8	204.4	297.4	393.2	224.7	204.4	190.0	0.0	228.8	335.9	348.7
9	196.6	305.6	381.7	221.7	196.6	194.2	-0.0	236.0	327.2	342.8

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.465	0.693	1.425	0.669	0.465	0.356	0.862	1.727
2	0.550	0.704	1.448	0.673	0.550	0.377	0.777	1.676
3	0.565	0.711	1.438	0.680	0.565	0.398	0.796	1.663
4	0.597	0.736	1.404	0.690	0.597	0.447	0.841	1.612
5	0.634	0.774	1.354	0.668	0.634	0.485	0.855	1.577
6	0.644	0.785	1.289	0.646	0.644	0.499	0.860	1.574
7	0.632	0.808	1.224	0.628	0.632	0.516	0.900	1.578
8	0.624	0.826	1.200	0.624	0.624	0.528	0.930	1.567
9	0.598	0.850	1.161	0.616	0.598	0.540	0.988	1.556

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	9.2	6.8	8.5	0.648	0.756	0.270	0.132	0.055	0.027
2	10.00	6.8	4.2	7.5	0.647	0.739	0.282	0.153	0.060	0.032
3	15.00	6.7	3.8	6.7	0.636	0.763	0.255	0.132	0.056	0.029
4	30.00	6.3	2.9	5.3	0.615	0.828	0.189	0.083	0.044	0.019
5	50.00	5.6	1.4	4.6	0.617	0.870	0.149	0.059	0.037	0.015
6	70.00	5.7	0.2	7.0	0.611	0.904	0.115	0.036	0.028	0.009
7	85.00	6.2	-0.4	9.4	0.606	0.911	0.112	0.042	0.028	0.010
8	90.00	6.2	-0.6	9.4	0.604	0.915	0.111	0.047	0.028	0.012
9	95.00	6.7	-0.5	8.8	0.602	0.922	0.108	0.051	0.027	0.013

TABLE V. - Continued.

(f) 90 Percent of design speed; reading 4209

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	36.5	68.3	58.8	288.4	1.164	9.81	1.520
2	24.597	23.929	0.0	34.8	64.9	56.1	288.3	1.165	10.13	1.529
3	24.254	23.640	-0.0	34.3	64.1	54.0	288.3	1.168	10.13	1.573
4	23.211	22.776	-0.0	33.4	61.7	50.4	288.5	1.166	10.14	1.621
5	21.760	21.620	0.0	35.3	59.3	45.7	288.0	1.173	10.16	1.669
6	20.246	20.467	0.0	35.7	57.7	41.4	288.0	1.171	10.16	1.675
7	19.030	19.604	0.0	36.7	56.6	38.3	288.1	1.170	10.16	1.667
8	18.603	19.314	0.0	37.8	56.4	36.7	288.0	1.172	10.16	1.656
9	18.161	19.027	-0.0	38.0	56.7	34.4	288.4	1.176	10.08	1.676

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	160.5	204.1	435.0	317.0	160.5	164.0	-0.0	121.4	404.3	392.7
2	186.6	216.3	439.7	318.1	186.6	177.6	0.0	123.5	398.2	387.4
3	191.1	225.6	437.2	316.6	191.1	186.3	-0.0	127.2	393.2	383.2
4	202.6	236.9	427.4	310.0	202.6	197.7	-0.0	130.6	376.3	369.3
5	209.7	248.1	410.6	289.9	209.7	202.6	0.0	143.3	352.9	350.7
6	207.9	255.3	388.5	276.4	207.9	207.3	0.0	149.0	328.3	331.8
7	203.3	258.3	369.7	263.8	203.3	207.0	0.0	154.5	308.8	318.1
8	201.0	261.1	362.8	257.4	201.0	206.4	0.0	159.9	302.1	313.6
9	193.6	267.3	352.4	255.2	193.6	210.7	-0.0	164.4	294.4	308.5

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.482	0.574	1.307	0.891	0.482	0.461	1.022	1.525
2	0.565	0.610	1.332	0.897	0.565	0.501	0.952	1.467
3	0.580	0.638	1.327	0.895	0.580	0.527	0.975	1.459
4	0.617	0.673	1.302	0.880	0.617	0.561	0.976	1.408
5	0.641	0.706	1.255	0.825	0.641	0.576	0.966	1.389
6	0.635	0.730	1.187	0.790	0.635	0.592	0.997	1.405
7	0.620	0.739	1.128	0.755	0.620	0.592	1.018	1.424
8	0.612	0.747	1.106	0.737	0.612	0.591	1.027	1.417
9	0.588	0.765	1.070	0.731	0.588	0.603	1.088	1.414

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	6.6	4.2	9.5	0.376	0.776	0.158	0.086	0.031	0.017
2	10.00	4.0	1.3	7.6	0.381	0.779	0.155	0.091	0.033	0.019
3	15.00	3.9	1.0	6.4	0.383	0.822	0.128	0.067	0.028	0.015
4	30.00	3.2	-0.2	6.0	0.384	0.889	0.083	0.034	0.019	0.008
5	50.00	2.8	-1.4	6.8	0.412	0.911	0.073	0.033	0.017	0.008
6	70.00	3.4	-2.1	9.0	0.412	0.930	0.061	0.027	0.015	0.006
7	85.00	3.9	-2.6	13.0	0.414	0.922	0.073	0.043	0.017	0.010
8	90.00	3.9	-2.9	13.8	0.423	0.901	0.097	0.070	0.023	0.017
9	95.00	4.4	-2.8	14.3	0.414	0.905	0.099	0.076	0.024	0.018

TABLE V. - Continued.

(g) 90 Percent of design speed; reading 4208

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	0.0	44.2	68.6	57.3	288.2	1.204	9.80	1.712
2	24.597	23.929	0.0	41.9	65.1	54.4	288.1	1.203	10.13	1.712
3	24.254	23.640	-0.0	40.0	64.3	52.9	288.4	1.197	10.13	1.738
4	23.211	22.776	0.0	38.8	62.0	49.6	288.6	1.191	10.14	1.769
5	21.760	21.620	-0.0	41.0	59.5	44.6	287.9	1.198	10.16	1.803
6	20.246	20.467	-0.0	40.9	57.8	41.1	288.0	1.190	10.16	1.798
7	19.030	19.604	0.0	42.5	56.9	37.1	288.0	1.189	10.16	1.774
8	18.603	19.314	-0.0	42.9	56.6	35.3	288.0	1.192	10.16	1.774
9	18.161	19.027	-0.0	43.7	56.9	32.1	288.4	1.198	10.08	1.803

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	158.2	216.7	434.2	287.3	158.2	155.4	0.0	151.0	404.3	392.7
2	184.9	227.1	439.3	290.2	184.9	169.0	0.0	151.7	398.5	387.7
3	188.8	231.1	435.7	293.5	188.8	177.0	-0.0	148.6	392.6	382.7
4	199.2	238.5	424.8	286.9	199.2	185.8	0.0	149.5	375.2	368.2
5	207.7	250.5	409.5	265.5	207.7	189.1	-0.0	164.2	352.9	350.6
6	206.1	252.0	387.2	252.8	206.1	190.4	-0.0	165.1	327.8	331.3
7	201.3	257.6	368.3	238.3	201.3	190.0	0.0	173.9	308.4	317.7
8	198.9	261.2	361.3	234.4	198.9	191.4	-0.0	177.8	301.6	313.1
9	191.8	269.3	351.3	230.0	191.8	194.7	-0.0	186.0	294.3	308.3

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	PEAK SS MACH NO
1	0.475	0.601	1.304	0.797	0.475	0.431	0.982	1.531
2	0.560	0.633	1.331	0.808	0.560	0.471	0.914	1.473
3	0.572	0.646	1.321	0.820	0.572	0.494	0.937	1.462
4	0.606	0.670	1.292	0.806	0.606	0.522	0.933	1.410
5	0.635	0.705	1.252	0.748	0.635	0.533	0.910	1.394
6	0.629	0.713	1.182	0.715	0.629	0.539	0.924	1.407
7	0.613	0.730	1.122	0.676	0.613	0.539	0.944	1.429
8	0.606	0.741	1.100	0.665	0.606	0.543	0.962	1.420
9	0.582	0.763	1.066	0.652	0.582	0.552	1.015	1.420

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	6.9	4.5	7.9	0.469	0.814	0.158	0.086	0.033	0.018
2	10.00	4.2	1.6	6.0	0.468	0.820	0.150	0.085	0.033	0.019
3	15.00	4.2	1.2	5.4	0.452	0.868	0.110	0.049	0.025	0.011
4	30.00	3.5	0.1	5.3	0.450	0.928	0.061	0.013	0.014	0.003
5	50.00	3.0	-1.2	5.7	0.487	0.925	0.069	0.029	0.017	0.007
6	70.00	3.6	-1.9	8.8	0.484	0.961	0.038	0.003	0.009	0.001
7	85.00	4.1	-2.4	11.8	0.497	0.939	0.063	0.033	0.015	0.008
8	90.00	4.1	-2.7	12.4	0.499	0.927	0.079	0.052	0.019	0.013
9	95.00	4.6	-2.5	12.1	0.502	0.925	0.087	0.064	0.021	0.016

TABLE V. - Continued.

(h) 90 Percent of design speed; reading 4207

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	48.6	69.6	56.3	288.2	1.230	9.82	1.830
2	24.597	23.929	-0.0	46.9	66.3	53.9	288.2	1.227	10.12	1.813
3	24.254	23.640	0.0	45.4	65.6	52.5	288.5	1.222	10.12	1.831
4	23.211	22.776	-0.0	44.1	63.4	49.3	288.6	1.212	10.14	1.848
5	21.760	21.620	-0.0	45.4	60.8	44.0	288.0	1.217	10.16	1.873
6	20.246	20.467	0.0	44.3	59.0	40.7	287.8	1.204	10.16	1.859
7	19.030	19.604	0.0	45.6	58.0	36.6	288.0	1.202	10.16	1.844
8	18.603	19.314	-0.0	46.8	57.7	33.5	287.9	1.208	10.16	1.856
9	18.161	19.027	-0.0	47.1	58.0	29.8	288.1	1.214	10.09	1.899

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	150.0	225.4	431.1	268.4	150.0	148.9	-0.0	169.2	404.2	392.5
2	174.5	232.5	434.8	269.3	174.5	158.7	-0.0	169.9	398.2	387.4
3	178.5	235.4	431.3	271.4	178.5	165.4	0.0	167.5	392.7	382.7
4	188.6	241.1	420.6	265.5	188.6	173.2	-0.0	167.7	375.9	368.9
5	196.8	251.7	403.5	245.7	196.8	176.6	-0.0	179.3	352.3	350.0
6	197.2	252.5	382.7	238.2	197.2	180.7	0.0	176.4	328.1	331.6
7	192.8	257.6	363.7	224.4	192.8	180.2	0.0	184.0	308.4	317.7
8	190.1	264.5	356.2	217.0	190.1	181.0	-0.0	192.9	301.2	312.7
9	183.8	274.6	347.0	215.6	183.8	187.0	-0.0	201.1	294.3	308.4

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.450	0.620	1.292	0.738	0.450	0.409	0.993	1.554
2	0.527	0.642	1.313	0.743	0.527	0.438	0.910	1.498
3	0.539	0.651	1.303	0.751	0.539	0.458	0.926	1.487
4	0.572	0.671	1.275	0.739	0.572	0.482	0.919	1.439
5	0.599	0.703	1.228	0.686	0.599	0.493	0.898	1.418
6	0.600	0.710	1.165	0.670	0.600	0.508	0.917	1.433
7	0.586	0.726	1.105	0.632	0.586	0.508	0.935	1.455
8	0.577	0.746	1.081	0.612	0.577	0.510	0.952	1.448
9	0.556	0.775	1.051	0.609	0.556	0.528	1.017	1.450

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	7.9	5.5	7.0	0.525	0.821	0.169	0.094	0.036	0.020
2	10.00	5.5	2.8	5.5	0.526	0.816	0.170	0.103	0.038	0.023
3	15.00	5.4	2.5	4.9	0.514	0.851	0.138	0.074	0.031	0.017
4	30.00	4.9	1.5	4.9	0.511	0.903	0.091	0.040	0.021	0.009
5	50.00	4.3	0.1	5.1	0.542	0.907	0.094	0.053	0.023	0.013
6	70.00	4.7	-0.8	8.3	0.525	0.950	0.052	0.016	0.013	0.004
7	85.00	5.3	-1.3	11.2	0.538	0.945	0.062	0.029	0.015	0.007
8	90.00	5.3	-1.6	10.7	0.554	0.931	0.082	0.053	0.020	0.013
9	95.00	5.7	-1.4	9.8	0.550	0.940	0.075	0.050	0.019	0.012

TABLE V. - Continued.

(i) 90 Percent of design speed; reading 4205

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	54.0	71.1	56.3	288.2	1.256	9.87	1.893
2	24.597	23.929	0.0	52.3	68.3	54.2	288.3	1.250	10.11	1.871
3	24.254	23.640	-0.0	50.8	67.5	52.6	289.1	1.243	10.11	1.886
4	23.211	22.776	-0.0	48.3	65.4	49.1	288.8	1.231	10.13	1.902
5	21.760	21.620	-0.0	48.5	62.7	44.1	288.0	1.230	10.16	1.908
6	20.246	20.467	-0.0	48.0	60.6	40.2	287.7	1.215	10.16	1.887
7	19.030	19.604	-0.0	47.9	59.6	35.6	287.7	1.212	10.16	1.882
8	18.603	19.314	-0.0	48.5	59.3	32.3	287.7	1.217	10.16	1.901
9	18.161	19.027	-0.0	48.9	59.5	28.5	287.8	1.222	10.10	1.941

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	138.0	232.3	427.0	245.8	138.0	136.5	-0.0	188.0	404.1	392.4
2	159.1	236.7	429.7	247.7	159.1	144.7	0.0	187.3	399.1	388.3
3	163.0	239.5	426.1	249.5	163.0	151.5	-0.0	185.5	393.7	383.7
4	172.8	244.4	414.5	248.0	172.8	162.5	-0.0	182.5	376.8	369.8
5	182.1	251.8	397.0	232.5	182.1	166.9	-0.0	188.6	352.7	350.5
6	184.9	253.6	376.7	222.2	184.9	169.8	-0.0	188.4	328.2	331.8
7	181.2	260.2	358.0	214.5	181.2	174.4	-0.0	193.1	308.7	318.0
8	178.6	267.6	350.1	209.9	178.6	177.4	-0.0	200.3	301.1	312.6
9	172.8	277.3	341.0	207.6	172.8	182.4	-0.0	208.8	294.0	308.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.412	0.633	1.276	0.670	0.412	0.372	0.989	1.591
2	0.478	0.647	1.291	0.677	0.478	0.396	0.909	1.543
3	0.490	0.657	1.280	0.684	0.490	0.416	0.929	1.532
4	0.521	0.675	1.249	0.685	0.521	0.449	0.941	1.485
5	0.551	0.699	1.202	0.646	0.551	0.463	0.917	1.460
6	0.561	0.710	1.142	0.622	0.561	0.475	0.918	1.470
7	0.549	0.731	1.084	0.603	0.549	0.490	0.962	1.496
8	0.540	0.753	1.059	0.591	0.540	0.499	0.993	1.490
9	0.522	0.781	1.030	0.585	0.522	0.514	1.055	1.493

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	9.4	7.0	7.0	0.590	0.782	0.224	0.144	0.048	0.030
2	10.00	7.4	4.7	5.9	0.586	0.783	0.217	0.145	0.048	0.032
3	15.00	7.4	4.4	5.1	0.575	0.819	0.181	0.112	0.041	0.025
4	30.00	6.9	3.5	4.7	0.559	0.871	0.131	0.075	0.031	0.018
5	50.00	6.2	2.0	5.2	0.575	0.882	0.127	0.082	0.031	0.020
6	70.00	6.3	0.9	7.8	0.571	0.925	0.084	0.045	0.020	0.011
7	85.00	6.8	0.3	10.2	0.566	0.935	0.077	0.041	0.019	0.010
8	90.00	6.9	0.0	9.5	0.572	0.929	0.089	0.057	0.022	0.014
9	95.00	7.3	0.1	8.5	0.572	0.938	0.083	0.054	0.021	0.014

TABLE V. - Continued.

(j) 90 Percent of design speed; reading 4204

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	55.9	72.0	55.5	288.3	1.269	9.89	1.914
2	24.597	23.929	-0.0	54.5	69.4	53.8	288.9	1.261	10.10	1.887
3	24.254	23.640	-0.0	55.1	69.1	52.6	288.9	1.263	10.10	1.888
4	23.211	22.776	-0.0	51.4	66.5	50.0	289.0	1.241	10.13	1.918
5	21.760	21.620	-0.0	49.7	63.8	43.6	287.9	1.236	10.16	1.917
6	20.246	20.467	-0.0	49.3	61.6	40.0	287.7	1.220	10.16	1.898
7	19.030	19.604	-0.0	48.7	60.5	35.1	287.6	1.216	10.16	1.895
8	18.603	19.314	0.0	49.2	60.3	31.6	287.5	1.221	10.16	1.921
9	18.161	19.027	-0.0	49.3	60.5	27.9	287.9	1.226	10.10	1.958

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	131.5	239.2	425.4	236.3	131.5	133.9	-0.0	198.2	404.5	392.9
2	150.0	241.4	426.3	237.3	150.0	140.0	-0.0	196.6	399.1	388.2
3	150.1	244.6	421.2	230.5	150.1	140.1	-0.0	200.5	393.5	383.5
4	163.5	242.1	410.6	235.4	163.5	151.2	-0.0	189.2	376.6	369.6
5	173.5	254.2	393.3	227.4	173.5	164.6	-0.0	193.8	353.0	350.7
6	177.5	254.3	373.2	216.4	177.5	165.8	-0.0	192.9	328.3	331.9
7	174.5	262.0	354.8	211.1	174.5	172.8	-0.0	196.9	309.0	318.3
8	172.4	270.4	347.5	207.5	172.4	176.8	0.0	204.7	301.7	313.2
9	166.7	279.8	338.6	206.3	166.7	182.3	-0.0	212.3	294.7	308.7

P	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.392	0.649	1.269	0.642	0.392	0.364	1.018	1.613
2	0.449	0.657	1.276	0.646	0.449	0.381	0.934	1.569
3	0.449	0.666	1.261	0.628	0.449	0.382	0.933	1.570
4	0.491	0.665	1.233	0.647	0.491	0.415	0.925	1.511
5	0.524	0.705	1.188	0.631	0.524	0.456	0.948	1.487
6	0.537	0.710	1.129	0.604	0.537	0.463	0.934	1.495
7	0.527	0.736	1.072	0.593	0.527	0.485	0.990	1.521
8	0.521	0.760	1.049	0.583	0.521	0.497	1.026	1.517
9	0.502	0.788	1.020	0.581	0.502	0.513	1.094	1.522

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	10.2	7.8	6.2	0.620	0.758	0.258	0.174	0.056	0.038
2	10.00	8.6	5.9	5.4	0.615	0.762	0.248	0.173	0.055	0.038
3	15.00	9.0	6.0	5.0	0.628	0.756	0.259	0.186	0.059	0.042
4	30.00	8.0	4.6	5.7	0.591	0.848	0.160	0.102	0.037	0.024
5	50.00	7.3	3.1	4.7	0.589	0.867	0.147	0.099	0.036	0.024
6	70.00	7.4	1.9	7.6	0.586	0.912	0.100	0.059	0.025	0.014
7	85.00	7.8	1.3	9.7	0.575	0.930	0.086	0.047	0.021	0.012
8	90.00	7.8	1.0	8.7	0.580	0.928	0.093	0.057	0.023	0.014
9	95.00	8.2	1.1	7.9	0.576	0.936	0.088	0.055	0.022	0.014

TABLE V. - Continued.

(k) 80 Percent of design speed; reading 4194

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	0.0	52.9	73.0	56.1	289.7	1.196	9.92	1.641
2	24.597	23.929	-0.0	52.4	70.2	55.0	289.8	1.194	10.10	1.614
3	24.254	23.640	-0.0	51.4	69.2	53.5	289.6	1.191	10.12	1.620
4	23.211	22.776	0.0	48.7	67.0	49.1	288.5	1.184	10.14	1.649
5	21.760	21.620	-0.0	47.2	64.4	44.2	287.6	1.176	10.15	1.659
6	20.246	20.467	-0.0	46.6	62.5	39.4	287.5	1.169	10.15	1.659
7	19.030	19.604	0.0	46.6	61.5	34.6	287.6	1.167	10.15	1.661
8	18.603	19.314	-0.0	47.3	61.3	31.6	287.5	1.170	10.15	1.673
9	18.161	19.027	-0.0	47.6	61.5	27.9	287.9	1.174	10.11	1.700

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	109.6	205.6	375.4	222.6	109.6	124.1	0.0	163.9	359.0	348.7
2	127.4	207.0	376.4	220.2	127.4	126.2	-0.0	164.0	354.2	344.6
3	132.2	209.3	373.0	219.5	132.2	130.6	-0.0	163.5	348.8	339.9
4	142.1	216.9	363.5	218.6	142.1	143.1	0.0	163.0	334.5	328.3
5	150.2	223.5	347.8	211.7	150.2	151.8	-0.0	164.1	313.7	311.6
6	151.8	228.7	329.0	203.2	151.8	157.1	-0.0	166.2	291.9	295.1
7	148.7	235.3	311.9	196.2	148.7	161.5	0.0	171.1	274.1	282.4
8	146.9	241.6	305.8	192.5	146.9	164.0	-0.0	177.5	268.2	278.5
9	142.2	250.2	297.8	191.1	142.2	168.8	-0.0	184.6	261.6	274.1

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	MERID PEAK SS MACH NO
1	0.324	0.568	1.112	0.616	0.324	0.343	1.133	1.521
2	0.379	0.573	1.119	0.610	0.379	0.349	0.990	1.467
3	0.393	0.581	1.110	0.609	0.393	0.362	0.988	1.452
4	0.425	0.607	1.086	0.611	0.425	0.400	1.007	1.413
5	0.451	0.630	1.044	0.596	0.451	0.428	1.010	1.409
6	0.456	0.648	0.988	0.576	0.456	0.445	1.035	1.443
7	0.446	0.669	0.935	0.558	0.446	0.459	1.086	1.428
8	0.440	0.687	0.917	0.548	0.440	0.466	1.116	1.408
9	0.425	0.712	0.891	0.544	0.425	0.481	1.187	1.382

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	11.3	8.9	6.8	0.571	0.776	0.220	0.176	0.047	0.037
2	10.00	9.4	6.7	6.6	0.577	0.755	0.237	0.201	0.051	0.044
3	15.00	9.1	6.2	5.9	0.573	0.774	0.219	0.186	0.049	0.041
4	30.00	8.5	5.1	4.8	0.558	0.835	0.163	0.138	0.038	0.032
5	50.00	7.9	3.7	5.3	0.551	0.882	0.121	0.101	0.029	0.025
6	70.00	8.3	2.8	7.0	0.544	0.921	0.086	0.067	0.021	0.017
7	85.00	8.8	2.3	9.2	0.539	0.936	0.075	0.062	0.019	0.015
8	90.00	8.8	2.0	8.8	0.545	0.930	0.086	0.077	0.022	0.019
9	95.00	9.2	2.0	7.9	0.541	0.939	0.081	0.075	0.021	0.019

TABLE V. - Continued.

(l) 70 Percent of design speed; reading 4202

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	27.3	68.9	58.9	288.5	1.078	9.93	1.203
2	24.597	23.929	-0.0	26.4	65.4	55.6	288.2	1.080	10.14	1.220
3	24.254	23.640	-0.0	26.1	64.4	52.9	288.3	1.083	10.14	1.258
4	23.211	22.776	-0.0	25.0	62.2	49.1	288.2	1.082	10.14	1.296
5	21.760	21.620	-0.0	26.9	60.0	45.4	288.1	1.086	10.14	1.314
6	20.246	20.467	-0.0	27.8	58.3	41.4	288.1	1.087	10.15	1.331
7	19.030	19.604	-0.0	29.8	57.2	35.4	288.0	1.095	10.14	1.352
8	18.603	19.314	-0.0	29.1	56.9	33.9	288.2	1.094	10.15	1.365
9	18.161	19.027	0.0	30.5	57.2	30.4	288.3	1.099	10.09	1.390

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	121.2	158.2	337.1	271.9	121.2	140.6	-0.0	72.7	314.5	305.5
2	142.0	172.0	340.7	272.4	142.0	154.0	-0.0	76.5	309.6	301.2
3	146.4	183.2	339.1	272.6	146.4	164.5	-0.0	80.7	305.8	298.0
4	154.3	195.6	331.2	270.8	154.3	177.2	-0.0	82.8	293.1	287.6
5	159.0	201.5	317.8	256.0	159.0	179.8	-0.0	91.1	275.1	273.3
6	157.9	207.3	300.2	244.4	157.9	183.4	-0.0	96.6	255.3	258.1
7	154.7	221.9	285.5	236.5	154.7	192.7	-0.0	110.1	240.0	247.2
8	153.0	227.3	280.3	239.4	153.0	198.7	-0.0	110.4	234.9	243.9
9	147.5	236.6	272.3	236.3	147.5	203.8	0.0	120.2	228.9	239.8

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	PEAK SS MACH NO
1	0.361	0.457	1.003	0.785	0.361	0.406	1.160	1.324
2	0.425	0.498	1.019	0.789	0.425	0.446	1.085	1.236
3	0.438	0.532	1.015	0.791	0.438	0.477	1.123	1.226
4	0.463	0.570	0.994	0.789	0.463	0.517	1.149	1.191
5	0.478	0.588	0.955	0.747	0.478	0.524	1.131	1.178
6	0.474	0.605	0.902	0.714	0.474	0.536	1.162	1.183
7	0.464	0.649	0.857	0.692	0.464	0.564	1.246	1.181
8	0.459	0.666	0.841	0.701	0.459	0.582	1.299	1.165
9	0.442	0.694	0.815	0.693	0.442	0.598	1.302	1.146

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	7.1	4.8	9.6	0.274	0.697	0.153	0.144	0.030	0.028
2	10.00	4.5	1.8	7.2	0.284	0.734	0.135	0.131	0.029	0.028
3	15.00	4.3	1.3	5.3	0.284	0.815	0.099	0.095	0.022	0.021
4	30.00	3.7	0.3	4.8	0.271	0.941	0.033	0.031	0.008	0.007
5	50.00	3.4	-0.7	6.5	0.292	0.947	0.035	0.032	0.008	0.008
6	70.00	4.0	-1.5	9.0	0.289	0.979	0.014	0.014	0.003	0.003
7	85.00	4.5	-2.1	10.1	0.290	0.952	0.038	0.038	0.009	0.009
8	90.00	4.5	-2.4	11.1	0.265	0.984	0.014	0.014	0.003	0.003
9	95.00	4.9	-2.2	10.4	0.262	0.995	0.004	0.004	0.001	0.001

TABLE V. - Continued.

(m) 70 Percent of design speed; reading 4203

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	31.6	69.4	58.0	288.4	1.089	9.93	1.260
2	24.597	23.929	-0.0	30.1	65.8	54.7	288.4	1.091	10.14	1.275
3	24.254	23.640	0.0	29.9	64.9	52.4	288.2	1.094	10.14	1.303
4	23.211	22.776	-0.0	28.2	62.7	49.3	288.1	1.091	10.14	1.332
5	21.760	21.620	-0.0	30.4	60.5	44.9	288.1	1.093	10.14	1.349
6	20.246	20.467	-0.0	31.5	58.8	40.9	288.1	1.096	10.15	1.365
7	19.030	19.604	0.0	33.1	57.8	34.8	288.0	1.101	10.14	1.384
8	18.603	19.314	-0.0	32.1	57.5	33.3	288.3	1.101	10.14	1.395
9	18.161	19.027	-0.0	33.8	57.8	29.9	288.3	1.106	10.09	1.416

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	117.9	161.9	335.8	259.9	117.9	137.9	-0.0	84.9	314.4	305.3
2	139.4	174.9	340.0	262.2	139.4	151.4	-0.0	87.6	310.1	301.6
3	143.5	183.7	337.9	261.0	143.5	159.3	0.0	91.4	306.0	298.2
4	150.7	191.1	328.4	258.4	150.7	168.4	-0.0	90.3	291.8	286.3
5	155.0	198.8	314.4	242.2	155.0	171.4	-0.0	100.7	273.5	271.8
6	154.0	203.9	297.4	230.1	154.0	173.9	-0.0	106.5	254.4	257.2
7	150.8	218.6	282.8	223.1	150.8	183.2	0.0	119.2	239.2	246.5
8	148.9	223.1	277.1	226.2	148.9	189.1	-0.0	118.5	233.7	242.6
9	144.0	231.5	270.1	221.9	144.0	192.4	-0.0	128.8	228.5	239.4

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.350	0.465	0.998	0.747	0.350	0.396	1.170	1.341
2	0.416	0.504	1.016	0.756	0.416	0.436	1.086	1.252
3	0.429	0.530	1.011	0.754	0.429	0.460	1.110	1.243
4	0.452	0.554	0.984	0.749	0.452	0.488	1.118	1.197
5	0.465	0.577	0.944	0.703	0.465	0.497	1.105	1.182
6	0.462	0.592	0.893	0.668	0.462	0.505	1.129	1.188
7	0.452	0.637	0.848	0.650	0.452	0.534	1.215	1.185
8	0.446	0.651	0.830	0.660	0.446	0.551	1.270	1.167
9	0.431	0.676	0.808	0.647	0.431	0.561	1.336	1.151

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	7.7	5.3	8.7	0.321	0.763	0.137	0.127	0.028	0.026
2	10.00	4.9	2.2	6.3	0.325	0.786	0.124	0.119	0.027	0.026
3	15.00	4.7	1.8	4.8	0.327	0.840	0.096	0.092	0.022	0.021
4	30.00	4.2	0.8	5.0	0.311	0.936	0.040	0.038	0.009	0.009
5	50.00	3.9	-0.3	6.1	0.338	0.959	0.028	0.027	0.007	0.006
6	70.00	4.6	-0.9	8.6	0.341	0.969	0.024	0.023	0.006	0.006
7	85.00	5.0	-1.5	9.4	0.340	0.968	0.028	0.028	0.007	0.007
8	90.00	5.0	-1.8	10.4	0.313	0.991	0.008	0.008	0.002	0.002
9	95.00	5.5	-1.7	9.9	0.319	0.986	0.013	0.013	0.003	0.003

TABLE V. - Continued.

(n) 70 Percent of design speed; reading 4201

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	36.6	70.3	57.4	288.9	1.104	9.94	1.313
2	24.597	23.929	-0.0	35.7	66.7	54.1	288.3	1.108	10.14	1.325
3	24.254	23.640	-0.0	34.1	65.8	52.4	288.1	1.106	10.14	1.345
4	23.211	22.776	-0.0	33.2	63.6	48.9	288.2	1.103	10.14	1.370
5	21.760	21.620	-0.0	34.1	61.5	45.1	288.2	1.104	10.14	1.387
6	20.246	20.467	-0.0	35.4	59.8	40.1	288.1	1.106	10.14	1.398
7	19.030	19.604	0.0	35.9	58.8	35.1	288.0	1.108	10.14	1.416
8	18.603	19.314	-0.0	36.1	58.5	32.8	288.2	1.110	10.14	1.425
9	18.161	19.027	-0.0	37.7	58.9	29.4	288.0	1.116	10.09	1.446

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	112.6	165.0	333.9	245.7	112.6	132.5	-0.0	98.4	314.3	305.3
2	133.6	176.9	337.7	245.1	133.6	143.7	-0.0	103.2	310.2	301.8
3	137.5	182.2	335.5	247.3	137.5	150.8	-0.0	102.3	306.1	298.3
4	145.1	190.8	326.8	242.6	145.1	159.6	-0.0	104.6	292.8	287.3
5	149.4	196.1	312.7	230.1	149.4	162.4	-0.0	109.9	274.6	272.9
6	148.6	204.0	295.6	217.5	148.6	166.3	-0.0	118.2	255.5	258.3
7	145.2	214.0	280.6	212.0	145.2	173.4	0.0	125.5	240.1	247.4
8	143.4	219.0	274.7	210.6	143.4	177.0	-0.0	129.0	234.3	243.2
9	138.2	227.0	267.6	206.1	138.2	179.5	-0.0	138.9	229.1	240.1

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.334	0.471	0.991	0.701	0.334	0.378	1.177	1.360
2	0.399	0.506	1.008	0.701	0.399	0.411	1.075	1.283
3	0.411	0.523	1.003	0.710	0.411	0.433	1.097	1.277
4	0.434	0.550	0.978	0.699	0.434	0.460	1.100	1.226
5	0.448	0.566	0.937	0.664	0.448	0.469	1.087	1.208
6	0.445	0.589	0.886	0.628	0.445	0.480	1.119	1.211
7	0.435	0.620	0.840	0.614	0.435	0.503	1.195	1.206
8	0.429	0.635	0.822	0.611	0.429	0.513	1.234	1.184
9	0.413	0.658	0.800	0.598	0.413	0.521	1.299	1.171

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	8.5	6.1	8.0	0.375	0.777	0.150	0.139	0.031	0.029
2	10.00	5.8	3.1	5.7	0.388	0.774	0.153	0.147	0.034	0.032
3	15.00	5.7	2.7	4.9	0.375	0.831	0.115	0.109	0.026	0.025
4	30.00	5.1	1.7	4.5	0.372	0.913	0.060	0.058	0.014	0.014
5	50.00	4.9	0.7	6.2	0.383	0.946	0.041	0.040	0.010	0.009
6	70.00	5.6	0.1	7.8	0.393	0.948	0.043	0.043	0.011	0.010
7	85.00	6.1	-0.4	9.7	0.381	0.968	0.030	0.030	0.007	0.007
8	90.00	6.1	-0.8	10.0	0.375	0.970	0.030	0.030	0.007	0.007
9	95.00	6.6	-0.6	9.4	0.383	0.958	0.045	0.045	0.011	0.011

TABLE V. - Continued.

(o) 70 Percent of design speed; reading 4198

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	41.1	71.1	56.6	288.8	1.117	9.96	1.355
2	24.597	23.929	-0.0	39.9	67.6	53.8	288.3	1.119	10.14	1.359
3	24.254	23.640	0.0	38.5	66.7	52.2	288.3	1.116	10.14	1.374
4	23.211	22.776	0.0	36.5	64.6	48.9	288.3	1.111	10.14	1.398
5	21.760	21.620	-0.0	37.2	62.5	44.9	288.1	1.110	10.14	1.410
6	20.246	20.467	-0.0	38.2	60.8	39.9	288.0	1.111	10.14	1.417
7	19.030	19.604	-0.0	39.0	59.9	34.7	288.0	1.113	10.14	1.436
8	18.603	19.314	-0.0	39.5	59.6	32.1	287.9	1.116	10.14	1.445
9	18.161	19.027	-0.0	40.3	59.9	29.0	288.0	1.121	10.10	1.463

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	107.7	169.4	332.2	231.9	107.7	127.6	-0.0	111.5	314.2	305.2
2	127.5	178.2	334.9	231.6	127.5	136.6	-0.0	114.3	309.7	301.3
3	131.3	182.5	332.5	233.1	131.3	142.9	0.0	113.5	305.5	297.7
4	138.6	189.1	323.5	231.3	138.6	152.0	0.0	112.5	292.3	286.8
5	142.5	194.4	308.7	218.8	142.5	154.9	-0.0	117.5	273.8	272.0
6	142.0	201.6	291.5	206.5	142.0	158.3	-0.0	124.8	254.6	257.3
7	138.7	211.3	276.6	199.8	138.7	164.3	-0.0	132.9	239.3	246.5
8	137.2	216.7	271.0	197.2	137.2	167.1	-0.0	138.0	233.7	242.7
9	132.4	223.9	264.3	195.4	132.4	170.8	-0.0	144.8	228.7	239.6

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.319	0.481	0.985	0.659	0.319	0.362	1.184	1.379
2	0.380	0.507	0.998	0.660	0.380	0.389	1.072	1.314
3	0.392	0.521	0.992	0.666	0.392	0.408	1.088	1.300
4	0.414	0.542	0.966	0.663	0.414	0.436	1.097	1.247
5	0.426	0.559	0.923	0.629	0.426	0.445	1.087	1.226
6	0.425	0.581	0.872	0.595	0.425	0.456	1.115	1.223
7	0.415	0.610	0.827	0.577	0.415	0.474	1.184	1.216
8	0.410	0.626	0.810	0.570	0.410	0.483	1.218	1.197
9	0.395	0.647	0.789	0.565	0.395	0.494	1.290	1.182

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	9.3	6.9	7.3	0.428	0.776	0.167	0.155	0.035	0.033
2	10.00	6.8	4.1	5.4	0.436	0.770	0.172	0.164	0.038	0.037
3	15.00	6.6	3.7	4.6	0.425	0.819	0.134	0.128	0.031	0.029
4	30.00	6.1	2.7	4.6	0.409	0.904	0.073	0.070	0.017	0.016
5	50.00	6.0	1.8	6.0	0.420	0.933	0.055	0.053	0.013	0.013
6	70.00	6.6	1.1	7.6	0.429	0.943	0.051	0.051	0.013	0.012
7	85.00	7.2	0.6	9.3	0.425	0.962	0.038	0.038	0.010	0.010
8	90.00	7.1	0.3	9.2	0.426	0.954	0.049	0.049	0.012	0.012
9	95.00	7.6	0.5	9.0	0.423	0.953	0.053	0.053	0.013	0.013

TABLE V. - Continued.

(p) 70 Percent of design speed; reading 4196

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	45.8	72.2	56.5	288.9	1.130	9.97	1.393
2	24.597	23.929	-0.0	44.9	68.9	54.2	288.1	1.132	10.14	1.389
3	24.254	23.640	-0.0	43.7	68.0	52.6	288.1	1.129	10.14	1.401
4	23.211	22.776	-0.0	41.4	65.9	49.0	288.1	1.123	10.14	1.422
5	21.760	21.620	-0.0	40.2	63.8	45.6	288.3	1.116	10.14	1.424
6	20.246	20.467	-0.0	41.4	62.2	39.3	288.1	1.118	10.14	1.444
7	19.030	19.604	-0.0	41.8	61.3	34.0	288.0	1.120	10.14	1.461
8	18.603	19.314	-0.0	42.3	61.0	31.9	287.9	1.122	10.14	1.465
9	18.161	19.027	-0.0	43.6	61.3	28.3	288.1	1.127	10.10	1.484

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	101.2	172 3	330.3	218.1	101.2	120.2	-0.0	123.5	314.5	305.4
2	119.9	178.6	332.3	216.2	119.9	126.4	-0.0	126.1	309.9	301.5
3	123.8	182.1	329.9	216.8	123.8	131.6	-0.0	125.8	305.8	298.1
4	130.5	188.1	320.1	215.2	130.5	141.2	-0.0	124.3	292.3	286.8
5	134.6	191.1	305.2	208.3	134.6	145.8	-0.0	123.4	274.0	272.2
6	134.2	202.0	287.9	195.7	134.2	151.5	-0.0	133.6	254.8	257.5
7	131.4	211.0	273.4	189.8	131.4	157.3	-0.0	140.7	239.7	246.9
8	130.3	215.1	268.7	187.4	130.3	159.0	-0.0	144.8	234.9	243.9
9	125.8	222.5	261.6	182.9	125.8	161.0	-0.0	153.5	229.4	240.3

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.300	0.487	0.978	0.616	0.300	0.340	1.188	1.407
2	0.357	0.506	0.989	0.612	0.357	0.358	1.054	1.345
3	0.369	0.517	0.983	0.615	0.369	0.374	1.064	1.331
4	0.389	0.537	0.955	0.614	0.389	0.403	1.081	1.277
5	0.402	0.547	0.911	0.596	0.402	0.417	1.084	1.253
6	0.401	0.580	0.860	0.562	0.401	0.435	1.129	1.247
7	0.392	0.607	0.816	0.546	0.392	0.453	1.197	1.238
8	0.389	0.619	0.802	0.540	0.389	0.458	1.220	1.222
9	0.375	0.641	0.780	0.527	0.375	0.464	1.280	1.203

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	10.4	8.0	7.2	0.481	0.767	0.192	0.177	0.040	0.037
2	10.00	8.0	5.3	5.8	0.491	0.748	0.207	0.197	0.046	0.044
3	15.00	7.8	4.9	5.1	0.483	0.781	0.181	0.172	0.041	0.039
4	30.00	7.4	4.0	4.7	0.466	0.861	0.116	0.112	0.027	0.026
5	50.00	7.3	3.1	6.7	0.455	0.914	0.074	0.073	0.018	0.017
6	70.00	8.0	2.5	6.9	0.469	0.935	0.063	0.063	0.016	0.015
7	85.00	8.5	2.0	8.7	0.463	0.955	0.048	0.048	0.012	0.012
8	90.00	8.5	1.7	9.1	0.465	0.948	0.059	0.059	0.015	0.015
9	95.00	9.0	1.8	8.3	0.474	0.943	0.070	0.070	0.018	0.018

TABLE V. - Continued.

(q) 70 Percent of design speed; reading 4195

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	50.7	73.4	57.5	288.9	1.140	9.99	1.408
2	24.597	23.929	-0.0	50.3	70.3	56.1	288.2	1.141	10.13	1.396
3	24.254	23.640	-0.0	49.6	69.5	54.5	288.1	1.139	10.14	1.402
4	23.211	22.776	-0.0	46.7	67.5	50.9	288.1	1.132	10.14	1.418
5	21.760	21.620	0.0	43.7	65.5	45.8	288.2	1.124	10.14	1.433
6	20.246	20.467	-0.0	43.5	64.0	38.1	288.1	1.126	10.14	1.473
7	19.030	19.604	-0.0	43.6	62.9	33.9	288.2	1.124	10.14	1.476
8	18.603	19.314	-0.0	44.5	62.6	31.6	287.9	1.126	10.14	1.475
9	18.161	19.027	-0.0	45.1	62.8	28.2	288.2	1.129	10.11	1.492

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	93.4	172.5	327.5	203.3	93.4	109.4	-0.0	133.4	313.9	304.8
2	111.0	175.7	329.7	201.0	111.0	112.2	-0.0	135.3	310.5	302.0
3	114.5	178.2	326.3	199.2	114.5	115.6	-0.0	135.6	305.6	297.9
4	121.1	183.0	317.0	198.9	121.1	125.5	-0.0	133.2	293.0	287.5
5	125.0	190.1	301.5	197.2	125.0	137.5	0.0	131.2	274.4	272.6
6	124.9	205.4	284.4	189.5	124.9	149.1	-0.0	141.3	255.5	258.3
7	122.9	210.3	269.7	183.3	122.9	152.2	-0.0	145.1	240.0	247.2
8	121.3	213.4	263.8	178.8	121.3	152.3	-0.0	149.5	234.2	243.2
9	117.7	220.5	257.3	176.6	117.7	155.6	-0.0	156.2	228.9	239.8

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	PEAK SS MACH NO
1	0.276	0.485	0.968	0.572	0.276	0.308	1.171	1.435
2	0.330	0.495	0.979	0.566	0.330	0.316	1.011	1.383
3	0.340	0.503	0.970	0.562	0.340	0.326	1.010	1.365
4	0.360	0.519	0.944	0.564	0.360	0.356	1.037	1.316
5	0.372	0.542	0.898	0.562	0.372	0.392	1.100	1.287
6	0.372	0.588	0.847	0.543	0.372	0.427	1.194	1.273
7	0.366	0.604	0.803	0.526	0.366	0.437	1.238	1.262
8	0.361	0.613	0.785	0.514	0.361	0.437	1.255	1.241
9	0.350	0.634	0.765	0.508	0.350	0.447	1.322	1.221

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	11.7	9.3	8.1	0.533	0.731	0.239	0.222	0.049	0.046
2	10.00	9.5	6.8	7.7	0.543	0.711	0.253	0.241	0.053	0.051
3	15.00	9.3	6.4	7.0	0.543	0.727	0.241	0.231	0.052	0.050
4	30.00	9.0	5.6	6.5	0.522	0.794	0.184	0.179	0.042	0.041
5	50.00	9.0	4.8	6.9	0.493	0.875	0.116	0.114	0.027	0.027
6	70.00	9.7	4.2	5.8	0.493	0.929	0.074	0.073	0.018	0.018
7	85.00	10.1	3.6	8.5	0.485	0.952	0.055	0.055	0.014	0.014
8	90.00	10.2	3.3	8.8	0.493	0.933	0.079	0.079	0.020	0.020
9	95.00	10.5	3.3	8.2	0.493	0.937	0.081	0.081	0.021	0.021

TABLE V. - Continued.

(r) 60 Percent of design speed; reading 4215

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	0.0	52.2	74.3	58.2	288.6	1.105	10.04	1.277
2	24.597	23.929	-0.0	52.3	71.4	57.2	288.1	1.105	10.13	1.268
3	24.254	23.640	0.0	51.7	70.7	55.9	288.1	1.104	10.14	1.270
4	23.211	22.776	-0.0	46.8	68.8	51.6	288.2	1.096	10.13	1.287
5	21.760	21.620	-0.0	42.2	66.7	46.1	288.1	1.087	10.14	1.297
6	20.246	20.467	-0.0	42.4	64.9	38.4	288.1	1.090	10.14	1.328
7	19.030	19.604	0.0	42.5	63.8	33.6	288.2	1.089	10.14	1.331
8	18.603	19.314	0.0	43.1	63.5	31.5	288.0	1.091	10.14	1.333
9	18.161	19.027	-0.0	44.2	63.5	28.1	288.1	1.094	10.12	1.344

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	75.4	146.8	279.4	170.8	75.4	89.9	0.0	116.0	269.0	261.3
2	89.2	148.6	280.0	167.3	89.2	90.8	-0.0	117.6	265.4	258.2
3	91.6	150.3	277.5	166.0	91.6	93.2	0.0	117.9	262.0	255.3
4	97.1	154.4	268.6	170.0	97.1	105.6	-0.0	112.6	250.5	245.8
5	101.3	161.9	255.8	173.0	101.3	120.0	-0.0	108.7	234.8	233.3
6	102.5	175.3	241.3	165.1	102.5	129.4	-0.0	118.3	218.4	220.8
7	101.1	181.3	228.8	160.7	101.1	133.8	0.0	122.4	205.2	211.4
8	100.0	184.5	224.6	158.1	100.0	134.7	0.0	126.0	201.0	208.7
9	97.6	190.3	219.1	154.5	97.6	136.4	-0.0	132.7	196.1	205.5

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.222	0.417	0.824	0.485	0.222	0.255	1.192	1.247
2	0.264	0.423	0.829	0.476	0.264	0.258	1.018	1.201
3	0.271	0.428	0.822	0.473	0.271	0.265	1.017	1.192
4	0.288	0.442	0.796	0.486	0.288	0.302	1.088	1.144
5	0.300	0.466	0.758	0.498	0.300	0.345	1.184	1.116
6	0.304	0.506	0.716	0.476	0.304	0.373	1.263	1.102
7	0.300	0.524	0.678	0.465	0.300	0.387	1.324	1.087
8	0.297	0.534	0.666	0.457	0.297	0.390	1.347	1.073
9	0.289	0.551	0.649	0.447	0.289	0.395	1.397	1.052

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	12.6	10.2	8.9	0.545	0.691	0.269	0.269	0.054	0.054
2	10.00	10.6	7.9	8.7	0.559	0.666	0.289	0.289	0.059	0.059
3	15.00	10.6	7.6	8.3	0.559	0.678	0.281	0.281	0.059	0.059
4	30.00	10.3	6.9	7.2	0.516	0.782	0.189	0.189	0.042	0.042
5	50.00	10.1	5.9	7.2	0.468	0.885	0.100	0.100	0.024	0.024
6	70.00	10.6	5.1	6.0	0.473	0.933	0.067	0.067	0.017	0.017
7	85.00	11.1	4.5	8.3	0.461	0.956	0.048	0.048	0.012	0.012
8	90.00	11.1	4.3	8.7	0.465	0.941	0.067	0.067	0.017	0.017
9	95.00	11.3	4.1	8.1	0.474	0.937	0.078	0.078	0.020	0.020

TABLE V. - Concluded.

(s) 50 Percent of design speed; reading 4218

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.935	24.216	-0.0	49.6	74.6	57.5	288.7	1.070	10.07	1.184
2	24.597	23.929	-0.0	50.3	71.7	56.2	288.1	1.072	10.13	1.180
3	24.254	23.640	-0.0	49.9	71.0	55.3	288.2	1.070	10.13	1.179
4	23.211	22.776	-0.0	45.6	69.2	51.4	288.2	1.065	10.13	1.191
5	21.760	21.620	0.0	41.0	67.0	46.2	288.1	1.060	10.13	1.198
6	20.246	20.467	-0.0	42.1	65.3	38.4	288.1	1.062	10.14	1.217
7	19.030	19.604	-0.0	42.2	64.2	33.8	288.1	1.062	10.14	1.220
8	18.603	19.314	-0.0	42.8	63.9	31.9	288.0	1.062	10.14	1.220
9	18.161	19.027	0.0	44.4	63.8	28.3	288.0	1.065	10.13	1.226

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	62.0	122.5	232.9	147.9	62.0	79.4	-0.0	93.3	224.5	218.1
2	73.3	124.8	233.1	143.4	73.3	79.8	-0.0	96.0	221.2	215.2
3	75.1	125.3	230.6	141.7	75.1	80.7	-0.0	95.9	218.0	212.4
4	79.4	128.6	223.2	144.3	79.4	90.0	-0.0	91.9	208.6	204.7
5	83.1	134.9	212.7	147.1	83.1	101.8	0.0	88.5	195.8	194.6
6	83.8	146.4	200.5	138.7	83.8	108.7	-0.0	98.1	182.2	184.2
7	82.6	151.2	190.2	134.7	82.6	112.0	-0.0	101.6	171.3	176.5
8	82.0	153.2	186.5	132.4	82.0	112.5	-0.0	104.0	167.5	173.9
9	80.4	157.9	182.2	128.2	80.4	112.9	0.0	110.5	163.5	171.3

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.183	0.352	0.686	0.425	0.183	0.228	1.280	1.043
2	0.216	0.359	0.688	0.412	0.216	0.229	1.088	1.003
3	0.222	0.361	0.681	0.408	0.222	0.232	1.074	0.994
4	0.235	0.371	0.659	0.417	0.235	0.260	1.133	0.956
5	0.246	0.391	0.629	0.426	0.246	0.295	1.225	0.933
6	0.248	0.425	0.593	0.403	0.248	0.315	1.298	0.922
7	0.244	0.440	0.562	0.392	0.244	0.326	1.356	0.910
8	0.242	0.445	0.551	0.385	0.242	0.327	1.371	0.895
9	0.238	0.459	0.539	0.373	0.238	0.328	1.404	0.878

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	12.8	10.4	8.2	0.516	0.703	0.243	0.243	0.050	0.050
2	10.00	10.8	8.1	7.8	0.538	0.673	0.271	0.271	0.057	0.057
3	15.00	10.8	7.9	7.8	0.539	0.687	0.259	0.259	0.055	0.055
4	30.00	10.7	7.3	7.1	0.500	0.792	0.171	0.171	0.038	0.038
5	50.00	10.5	6.3	7.3	0.450	0.888	0.094	0.094	0.022	0.022
6	70.00	11.1	5.6	6.0	0.465	0.926	0.072	0.072	0.018	0.018
7	85.00	11.5	5.0	8.4	0.455	0.947	0.056	0.056	0.014	0.014
8	90.00	11.5	4.6	9.0	0.458	0.938	0.069	0.069	0.017	0.017
9	95.00	11.5	4.4	8.3	0.475	0.921	0.095	0.095	0.024	0.024

TABLE VI. - BLADE-ELEMENT DATA AT BLADE EDGES FOR STATOR 37

(a) 100 Percent of design speed; reading 4193

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	36.8	12.4	36.8	12.4	349.0	1.000	16.11	0.967
2	23.741	23.546	35.6	10.5	35.6	10.5	349.4	1.000	16.75	0.975
3	23.482	23.317	34.4	10.2	34.4	10.2	349.7	1.000	17.23	0.984
4	22.695	22.629	33.4	10.2	33.4	10.2	348.6	1.000	17.73	0.990
5	21.615	21.684	34.9	10.9	34.9	10.9	350.0	1.000	18.38	0.980
6	20.518	20.726	36.2	11.6	36.2	11.6	351.2	1.000	19.05	0.981
7	19.682	19.995	37.3	11.0	37.3	11.0	349.2	1.000	18.57	0.981
8	19.398	19.751	38.3	10.8	38.3	10.8	349.2	1.000	18.35	0.978
9	19.111	19.505	39.6	10.7	39.6	10.7	350.1	1.000	18.25	0.967

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	235.4	172.5	235.4	172.5	188.4	168.4	141.2	37.1	0.0	0.0
2	249.5	194.9	249.5	194.9	202.9	191.7	145.0	35.4	0.0	0.0
3	258.4	208.9	258.4	208.9	213.2	205.6	146.0	37.0	0.0	0.0
4	269.4	225.3	269.4	225.3	224.8	221.8	148.4	39.8	0.0	0.0
5	280.6	240.2	280.6	240.2	230.2	235.8	160.4	45.5	0.0	0.0
6	291.6	252.7	291.6	252.7	235.3	247.5	172.2	50.7	0.0	0.0
7	286.9	249.0	286.9	249.0	228.3	244.4	173.8	47.5	0.0	0.0
8	284.7	246.8	284.7	246.8	223.5	242.4	176.3	46.4	0.0	0.0
9	284.5	242.9	284.5	242.9	219.1	238.7	181.4	45.1	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.655	0.471	0.655	0.471	0.524	0.460	0.894	0.915
2	0.697	0.535	0.697	0.535	0.567	0.526	0.944	0.939
3	0.725	0.575	0.725	0.575	0.598	0.566	0.964	0.943
4	0.760	0.625	0.760	0.625	0.634	0.615	0.987	0.956
5	0.794	0.668	0.794	0.668	0.651	0.656	1.024	1.028
6	0.828	0.705	0.828	0.705	0.668	0.691	1.052	1.090
7	0.815	0.696	0.815	0.696	0.649	0.683	1.071	1.079
8	0.808	0.689	0.808	0.689	0.634	0.677	1.084	1.085
9	0.806	0.677	0.806	0.677	0.621	0.665	1.089	1.108

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5 00	-6.1	-13.6	11.1	0.438	0.000	0.132	0.132	0.050	0.050
2	10.00	-7.4	-14.6	9.0	0.388	0.000	0.091	0.091	0.034	0.034
3	15.00	-8.5	-15.6	8.7	0.353	0.000	0.056	0.056	0.021	0.021
4	30.00	-8.9	-15.3	8.2	0.315	0.000	0.031	0.031	0.011	0.011
5	50.00	-7.2	-12.8	8.4	0.293	0.000	0.059	0.059	0.021	0.021
6	70.00	-6.7	-11.3	8.7	0.280	0.000	0.054	0.054	0.019	0.019
7	85.00	-6.7	-10.7	8.0	0.283	0.000	0.055	0.055	0.019	0.019
8	90.00	-6.1	-9.9	7.8	0.288	0.000	0.062	0.062	0.021	0.021
9	95.00	-5.1	-8.7	7.6	0.307	0.000	0.095	0.095	0.032	0.032

TABLE VI. - Continued.

(b) 100 Percent of design speed; reading 4192

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	42.9	12.8	42.9	12.8	358.9	1.000	17.77	0.969
2	23.741	23.546	41.5	10.9	41.5	10.9	358.8	1.000	18.33	0.974
3	23.482	23.317	39.9	10.9	39.9	10.9	357.9	1.000	18.68	0.983
4	22.695	22.629	38.3	11.1	38.3	11.1	355.3	1.000	19.04	0.987
5	21.615	21.684	39.7	11.3	39.7	11.3	356.2	1.000	19.56	0.978
6	20.518	20.726	40.8	12.4	40.8	12.4	357.1	1.000	20.10	0.980
7	19.682	19.995	40.9	11.5	40.9	11.5	354.9	1.000	20.00	0.976
8	19.398	19.751	41.7	11.6	41.7	11.6	355.3	1.000	20.03	0.974
9	19.111	19.505	42.7	12.4	42.7	12.4	356.7	1.000	20.17	0.964

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	241.7	158.0	241.7	158.0	177.0	154.0	164.7	35.0	0.0	0.0
2	253.0	177.1	253.0	177.1	189.5	173.9	167.7	33.6	0.0	0.0
3	258.9	189.8	258.9	189.8	198.7	186.4	166.1	36.0	0.0	0.0
4	266.8	203.1	266.8	203.1	209.5	199.3	165.2	39.1	0.0	0.0
5	276.7	216.8	276.7	216.8	213.0	212.6	176.6	42.4	0.0	0.0
6	289.0	230.4	289.0	230.4	218.9	225.0	188.7	49.4	0.0	0.0
7	290.3	230.2	290.3	230.2	219.4	225.6	190.0	45.8	0.0	0.0
8	292.7	231.6	292.7	231.6	218.6	226.8	194.8	46.7	0.0	0.0
9	297.0	232.7	297.0	232.7	218.4	227.3	201.2	49.8	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.664	0.423	0.664	0.423	0.486	0.413	0.871	1.066
2	0.698	0.477	0.698	0.477	0.523	0.468	0.918	1.083
3	0.717	0.514	0.717	0.514	0.550	0.504	0.938	1.070
4	0.744	0.554	0.744	0.554	0.584	0.543	0.951	1.063
5	0.774	0.593	0.774	0.593	0.596	0.581	0.998	1.132
6	0.812	0.632	0.812	0.632	0.615	0.617	1.028	1.198
7	0.818	0.634	0.818	0.634	0.619	0.621	1.028	1.186
8	0.826	0.637	0.826	0.637	0.617	0.624	1.038	1.208
9	0.837	0.639	0.837	0.639	0.616	0.624	1.041	1.239

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	0.0	-7.5	11.4	0.554	0.000	0.121	0.121	0.045	0.045
2	10.00	-1.4	-8.7	9.5	0.504	0.000	0.095	0.095	0.036	0.036
3	15.00	-3.0	-10.1	9.5	0.459	0.000	0.058	0.058	0.022	0.022
4	30.00	-4.1	-10.5	9.2	0.416	0.000	0.043	0.043	0.016	0.016
5	50.00	-2.5	-8.0	8.7	0.393	0.000	0.068	0.068	0.024	0.024
6	70.00	-2.1	-6.8	9.5	0.373	0.000	0.057	0.057	0.020	0.020
7	85.00	-3.0	-7.1	8.4	0.377	0.000	0.067	0.067	0.023	0.023
8	90.00	-2.6	-6.4	8.6	0.381	0.000	0.073	0.073	0.025	0.025
9	95.00	-2.0	-5.7	9.3	0.388	0.000	0.097	0.097	0.032	0.032

TABLE VI. - Continued.

(c) 100 Percent of design speed; reading 4182

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	47.6	13.5	47.6	13.5	367.7	1.000	19.40	0.967
2	23.741	23.546	46.1	11.2	46.1	11.2	366.8	1.000	19.88	0.968
3	23.482	23.317	43.1	11.0	43.1	11.0	363.5	1.000	20.15	0.973
4	22.695	22.629	42.7	12.8	42.7	12.8	362.8	1.000	20.42	0.976
5	21.615	21.684	44.9	12.7	44.9	12.7	363.5	1.000	20.99	0.974
6	20.518	20.726	45.0	13.2	45.0	13.2	364.1	1.000	21.47	0.973
7	19.682	19.995	44.2	11.9	44.2	11.9	360.4	1.000	21.29	0.970
8	19.398	19.751	45.1	12.5	45.1	12.5	361.2	1.000	21.36	0.967
9	19.111	19.505	46.2	13.4	46.2	13.4	363.2	1.000	21.62	0.956

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	248.8	156.0	248.8	156.0	167.6	151.7	183.9	36.4	0.0	0.0
2	257.7	171.3	257.7	171.3	178.9	168.0	185.5	33.3	0.0	0.0
3	260.5	180.6	260.5	180.6	190.1	177.2	178.1	34.4	0.0	0.0
4	272.2	192.4	272.2	192.4	199.9	187.6	184.7	42.5	0.0	0.0
5	281.0	208.7	281.0	208.7	199.2	203.6	198.3	45.8	0.0	0.0
6	295.1	220.3	295.1	220.3	208.8	214.5	208.5	50.4	0.0	0.0
7	294.5	219.0	294.5	219.0	211.2	214.3	205.2	45.0	0.0	0.0
8	298.1	221.0	298.1	221.0	210.5	215.7	211.1	47.9	0.0	0.0
9	304.4	223.5	304.4	223.5	210.9	217.4	219.5	52.0	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.676	0.413	0.676	0.413	0.455	0.401	0.905	1.193
2	0.704	0.455	0.704	0.455	0.488	0.447	0.940	1.200
3	0.716	0.483	0.716	0.483	0.522	0.474	0.933	1.147
4	0.752	0.517	0.752	0.517	0.552	0.504	0.939	1.190
5	0.779	0.563	0.779	0.563	0.552	0.549	1.022	1.277
6	0.822	0.596	0.822	0.596	0.581	0.580	1.027	1.330
7	0.825	0.596	0.825	0.596	0.591	0.583	1.015	1.287
8	0.835	0.601	0.835	0.601	0.590	0.586	1.025	1.317
9	0.853	0.606	0.853	0.606	0.591	0.590	1.031	1.363

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	4.7	-2.8	12.1	0.602	0.000	0.123	0.123	0.046	0.046
2	10.00	3.1	-4.1	9.8	0.562	0.000	0.113	0.113	0.042	0.042
3	15.00	0.2	-6.8	9.5	0.517	0.000	0.092	0.092	0.034	0.034
4	30.00	0.4	-6.0	10.8	0.489	0.000	0.078	0.078	0.028	0.028
5	50.00	2.8	-2.8	10.1	0.455	0.000	0.079	0.079	0.028	0.028
6	70.00	2.1	-2.6	10.3	0.442	0.000	0.077	0.075	0.027	0.026
7	85.00	0.2	-3.8	8.8	0.443	0.000	0.083	0.082	0.028	0.028
8	90.00	0.8	-3.1	9.5	0.445	0.000	0.089	0.088	0.030	0.030
9	95.00	1.4	-2.2	10.3	0.451	0.000	0.117	0.113	0.039	0.038

TABLE VI. - Continued.

(d) 100 Percent of design speed; reading 4188

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	51.7	12.9	51.7	12.9	378.0	1.000	20.89	0.968
2	23.741	23.546	50.2	11.8	50.2	11.8	376.1	1.000	21.18	0.962
3	23.482	23.317	49.1	12.0	49.1	12.0	374.5	1.000	21.36	0.965
4	22.695	22.629	47.1	13.8	47.1	13.8	370.8	1.000	21.59	0.970
5	21.615	21.684	47.2	14.6	47.2	14.6	370.3	1.000	22.21	0.968
6	20.518	20.726	46.9	13.9	46.9	13.9	367.0	1.000	22.18	0.959
7	19.682	19.995	47.2	12.4	47.2	12.4	364.5	1.000	21.97	0.959
8	19.398	19.751	48.0	12.9	48.0	12.9	365.1	1.000	22.03	0.953
9	19.111	19.505	48.8	13.4	48.8	13.4	366.4	1.000	22.24	0.942

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	265.0	157.4	265.0	157.4	164.2	153.4	208.0	35.2	0.0	0.0
2	269.5	166.2	269.5	166.2	172.4	162.7	207.2	34.0	0.0	0.0
3	272.5	173.3	272.5	173.3	178.5	169.4	205.9	36.1	0.0	0.0
4	277.7	184.7	277.7	184.7	189.1	179.4	203.3	44.1	0.0	0.0
5	289.7	200.2	289.7	200.2	197.0	193.8	212.4	50.5	0.0	0.0
6	294.6	200.4	294.6	200.4	201.3	194.5	215.0	48.3	0.0	0.0
7	296.2	198.3	296.2	198.3	201.0	193.7	217.5	42.4	0.0	0.0
8	299.6	197.8	299.6	197.8	200.6	192.8	222.5	44.1	0.0	0.0
9	305.3	198.5	305.3	198.5	201.2	193.0	229.7	46.1	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	MERID PEAK SS MACH NO
1	0.714	0.411	0.714	0.411	0.442	0.400	0.934	1.361
2	0.729	0.436	0.729	0.436	0.466	0.426	0.944	1.349
3	0.740	0.456	0.740	0.456	0.485	0.446	0.949	1.336
4	0.760	0.490	0.760	0.490	0.517	0.476	0.948	1.313
5	0.797	0.534	0.797	0.534	0.542	0.516	0.984	1.369
6	0.817	0.537	0.817	0.537	0.558	0.521	0.966	1.374
7	0.825	0.532	0.825	0.532	0.560	0.520	0.963	1.373
8	0.835	0.531	0.835	0.531	0.559	0.517	0.961	1.398
9	0.851	0.532	0.851	0.532	0.561	0.517	0.960	1.436

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	8.8	1.3	11.5	0.658	0.000	0.112	0.112	0.042	0.042
2	10.00	7.3	0.0	10.4	0.630	0.000	0.126	0.126	0.047	0.047
3	15.00	6.2	-0.9	10.6	0.602	0.000	0.116	0.115	0.043	0.043
4	30.00	4.7	-1.7	11.9	0.550	0.000	0.093	0.093	0.034	0.034
5	50.00	5.0	-0.5	12.1	0.512	0.000	0.094	0.092	0.033	0.033
6	70.00	4.0	-0.7	11.0	0.519	0.000	0.115	0.112	0.040	0.039
7	85.00	3.3	-0.7	9.3	0.534	0.000	0.113	0.110	0.038	0.037
8	90.00	3.6	-0.2	9.8	0.542	0.000	0.127	0.123	0.043	0.041

TABLE VI. - Continued.

(e) 100 Percent of design speed; reading 4187

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	56.6	14.1	56.6	14.1	384.9	1.000	21.57	0.967
2	23.741	23.546	55.1	13.3	55.1	13.3	382.7	1.000	21.74	0.958
3	23.482	23.317	53.6	13.3	53.6	13.3	380.9	1.000	21.85	0.956
4	22.695	22.629	50.2	14.7	50.2	14.7	376.4	1.000	22.25	0.956
5	21.615	21.684	49.1	15.8	49.1	15.8	373.4	1.000	22.68	0.951
6	20.518	20.726	48.8	14.2	48.8	14.2	368.4	1.000	22.31	0.951
7	19.682	19.995	49.1	13.2	49.1	13.2	366.3	1.000	22.09	0.955
8	19.398	19.751	49.4	14.1	49.4	14.1	366.9	1.000	22.23	0.947
9	19.111	19.505	50.2	14.5	50.2	14.5	368.3	1.000	22.43	0.938

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	270.1	164.2	270.1	164.2	148.7	159.2	225.5	40.1	0.0	0.0
2	273.0	168.7	273.0	168.7	156.1	164.2	223.9	38.7	0.0	0.0
3	275.0	172.1	275.0	172.1	163.4	167.5	221.2	39.6	0.0	0.0
4	282.0	183.0	282.0	183.0	180.4	177.1	216.8	46.3	0.0	0.0
5	292.4	193.6	292.4	193.6	191.5	186.3	221.0	52.8	0.0	0.0
6	291.9	189.8	291.9	189.8	192.4	184.0	219.5	46.6	0.0	0.0
7	295.6	189.3	295.6	189.3	193.6	184.3	223.4	43.1	0.0	0.0
8	300.0	189.6	300.0	189.6	195.1	183.9	227.8	46.2	0.0	0.0
9	305.7	191.1	305.7	191.1	195.6	185.0	234.9	47.8	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.722	0.425	0.722	0.425	0.397	0.412	1.070	1.503
2	0.732	0.438	0.732	0.438	0.419	0.427	1.052	1.482
3	0.740	0.449	0.740	0.449	0.440	0.437	1.025	1.453
4	0.767	0.481	0.767	0.481	0.490	0.466	0.982	1.409
5	0.802	0.513	0.802	0.513	0.525	0.493	0.973	1.430
6	0.806	0.506	0.806	0.506	0.532	0.490	0.956	1.409
7	0.821	0.506	0.821	0.506	0.537	0.492	0.952	1.418
8	0.834	0.506	0.834	0.506	0.542	0.491	0.942	1.430
9	0.850	0.509	0.850	0.509	0.544	0.493	0.946	1.476

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	13.6	6.1	12.8	0.657	0.000	0.113	0.108	0.042	0.040
2	10.00	12.2	4.9	11.8	0.643	0.000	0.139	0.135	0.052	0.050
3	15.00	10.6	3.6	11.8	0.626	0.000	0.144	0.140	0.053	0.052
4	30.00	7.9	1.5	12.7	0.578	0.000	0.136	0.133	0.049	0.048
5	50.00	7.0	1.5	13.3	0.547	0.000	0.141	0.136	0.050	0.048
6	70.00	5.9	1.2	11.3	0.559	0.000	0.142	0.138	0.049	0.048
7	85.00	5.2	1.1	10.1	0.569	0.000	0.126	0.121	0.043	0.041
8	90.00	5.1	1.3	11.0	0.574	0.000	0.145	0.138	0.048	0.046
9	95.00	5.5	1.9	11.4	0.581	0.000	0.166	0.155	0.055	0.051

TABLE VI. - Continued.

(f) 90 Percent of design speed; reading 4209

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	33.6	13.6	33.6	13.6	335.6	1.000	14.90	0.959
2	23.741	23.546	32.0	10.8	32.0	10.8	336.0	1.000	15.48	0.974
3	23.482	23.317	31.5	10.3	31.5	10.3	336.7	1.000	15.93	0.981
4	22.695	22.629	30.8	10.4	30.8	10.4	336.4	1.000	16.44	0.985
5	21.615	21.684	32.9	10.9	32.9	10.9	337.8	1.000	16.96	0.983
6	20.518	20.726	33.7	10.5	33.7	10.5	337.1	1.000	17.02	0.984
7	19.682	19.995	35.4	10.5	35.4	10.5	337.2	1.000	16.93	0.980
8	19.398	19.751	36.8	10.7	36.8	10.7	337.6	1.000	16.83	0.981
9	19.111	19.505	37.6	11.5	37.6	11.5	339.0	1.000	16.89	0.973

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	221.6	173.1	221.6	173.1	184.6	168.3	122.5	40.6	0.0	0.0
2	235.1	197.1	235.1	197.1	199.5	193.6	124.4	37.0	0.0	0.0
3	244.9	210.5	244.9	210.5	208.8	207.1	128.1	37.5	0.0	0.0
4	255.7	226.3	255.7	226.3	219.6	222.6	131.0	40.9	0.0	0.0
5	263.8	240.6	263.8	240.6	221.5	236.3	143.3	45.4	0.0	0.0
6	267.7	245.9	267.7	245.9	222.6	241.8	148.7	45.0	0.0	0.0
7	265.8	247.0	265.8	247.0	216.7	242.9	153.9	44.8	0.0	0.0
8	265.8	246.9	265.8	246.9	212.9	242.6	159.2	46.0	0.0	0.0
9	268.3	246.2	268.3	246.2	212.6	241.2	163.7	49.3	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.627	0.482	0.627	0.482	0.522	0.469	0.912	0.802
2	0.668	0.553	0.668	0.553	0.567	0.543	0.971	0.810
3	0.697	0.592	0.697	0.592	0.594	0.582	0.992	0.830
4	0.732	0.640	0.732	0.640	0.628	0.630	1.013	0.842
5	0.756	0.683	0.756	0.683	0.634	0.670	1.067	0.922
6	0.769	0.700	0.769	0.700	0.640	0.688	1.086	0.942
7	0.763	0.703	0.763	0.703	0.622	0.692	1.121	0.956
8	0.762	0.703	0.762	0.703	0.611	0.690	1.140	0.984
9	0.769	0.699	0.769	0.699	0.609	0.685	1.135	1.001

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-9.4	-16.9	12.2	0.362	0.000	0.177	0.177	0.066	0.066
2	10.00	-11.0	-18.2	9.4	0.305	0.000	0.102	0.102	0.038	0.038
3	15.00	-11.4	-18.5	8.8	0.282	0.000	0.068	0.068	0.025	0.025
4	30.00	-11.5	-17.9	8.5	0.247	0.000	0.051	0.051	0.019	0.019
5	50.00	-9.2	-14.7	8.3	0.223	0.000	0.052	0.052	0.019	0.019
6	70.00	-9.1	-13.8	7.6	0.218	0.000	0.048	0.048	0.017	0.017
7	85.00	-8.6	-12.6	7.4	0.211	0.000	0.062	0.062	0.021	0.021
8	90.00	-7.5	-11.4	7.7	0.216	0.000	0.060	0.060	0.020	0.020
9	95.00	-7.1	-10.7	8.4	0.226	0.000	0.085	0.085	0.028	0.028

TABLE VI. - Continued.

(g) 90 Percent of design speed; reading 4208

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	41.2	13.4	41.2	13.4	347.0	1.000	16.79	0.974
2	23.741	23.546	39.0	11.0	39.0	11.0	346.5	1.000	17.35	0.974
3	23.482	23.317	37.2	10.9	37.2	10.9	345.2	1.000	17.60	0.984
4	22.695	22.629	36.2	11.0	36.2	11.0	343.6	1.000	17.94	0.989
5	21.615	21.684	38.7	11.6	38.7	11.6	344.9	1.000	18.32	0.990
6	20.518	20.726	39.0	10.9	39.0	10.9	342.7	1.000	18.27	0.988
7	19.682	19.995	41.2	10.6	41.2	10.6	342.5	1.000	18.03	0.983
8	19.398	19.751	42.0	11.2	42.0	11.2	343.3	1.000	18.05	0.981
9	19.111	19.505	43.3	12.7	43.3	12.7	345.6	1.000	18.18	0.972

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	231.4	157.0	231.4	157.0	174.2	152.8	152.4	36.3	0.0	0.0
2	243.0	175.0	243.0	175.0	188.9	171.8	152.9	33.5	0.0	0.0
3	247.5	186.1	247.5	186.1	197.2	182.8	149.6	35.1	0.0	0.0
4	254.0	200.2	254.0	200.2	204.9	196.4	150.1	38.3	0.0	0.0
5	262.9	213.7	262.9	213.7	205.3	209.3	164.3	43.0	0.0	0.0
6	261.4	216.7	261.4	216.7	203.0	212.7	164.7	41.1	0.0	0.0
7	263.1	214.9	263.1	214.9	198.0	211.2	173.2	39.5	0.0	0.0
8	264.7	216.2	264.7	216.2	196.8	212.1	177.0	42.0	0.0	0.0
9	269.8	218.7	269.8	218.7	196.3	213.3	185.2	48.2	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.645	0.428	0.645	0.428	0.485	0.416	0.877	0.997
2	0.681	0.480	0.681	0.480	0.529	0.471	0.910	0.998
3	0.696	0.513	0.696	0.513	0.554	0.503	0.927	0.974
4	0.718	0.555	0.718	0.555	0.579	0.545	0.959	0.975
5	0.744	0.594	0.744	0.594	0.581	0.582	1.020	1.063
6	0.742	0.605	0.742	0.605	0.576	0.594	1.048	1.052
7	0.748	0.600	0.748	0.600	0.563	0.589	1.067	1.091
8	0.752	0.603	0.752	0.603	0.559	0.591	1.077	1.107
9	0.765	0.608	0.765	0.608	0.557	0.593	1.087	1.150

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-1.8	-9.3	12.0	0.515	0.000	0.107	0.107	0.040	0.040
2	10.00	-3.9	-11.2	9.6	0.469	0.000	0.096	0.096	0.036	0.036
3	15.00	-5.7	-12.8	9.4	0.425	0.000	0.056	0.056	0.021	0.021
4	30.00	-6.1	-12.5	9.1	0.377	0.000	0.036	0.036	0.013	0.013
5	50.00	-3.5	-9.0	9.1	0.355	0.000	0.033	0.033	0.012	0.012
6	70.00	-3.8	-8.5	8.0	0.338	0.000	0.038	0.038	0.013	0.013
7	85.00	-2.8	-6.8	7.6	0.357	0.000	0.056	0.056	0.019	0.019
8	90.00	-2.4	-6.2	8.1	0.357	0.000	0.062	0.062	0.021	0.021
9	95.00	-1.4	-5.0	9.6	0.360	0.000	0.086	0.086	0.029	0.029

TABLE VI. - Continued.

(h) 90 Percent of design speed; reading 4207

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	45.7	13.6	45.7	13.6	354.4	1.000	17.97	0.969
2	23.741	23.546	44.1	11.5	44.1	11.5	353.6	1.000	18.35	0.972
3	23.482	23.317	42.6	11.5	42.6	11.5	352.5	1.000	18.53	0.980
4	22.695	22.629	41.5	13.1	41.5	13.1	349.9	1.000	18.73	0.983
5	21.615	21.684	43.2	14.1	43.2	14.1	350.4	1.000	19.03	0.986
6	20.518	20.726	42.5	12.3	42.5	12.3	346.5	1.000	18.89	0.984
7	19.682	19.995	44.4	11.6	44.4	11.6	346.2	1.000	18.74	0.982
8	19.398	19.751	45.9	12.8	45.9	12.8	347.7	1.000	18.86	0.979
9	19.111	19.505	46.7	14.4	46.7	14.4	349.7	1.000	19.16	0.964

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	238.5	151.3	238.5	151.3	166.5	147.1	170.7	35.7	0.0	0.0
2	246.0	165.8	246.0	165.8	176.6	162.5	171.2	33.0	0.0	0.0
3	249.0	175.1	249.0	175.1	183.3	171.6	168.6	34.9	0.0	0.0
4	253.7	185.5	253.7	185.5	189.9	180.7	168.3	41.9	0.0	0.0
5	261.8	198.1	261.8	198.1	190.7	192.2	179.3	48.2	0.0	0.0
6	260.5	199.2	260.5	199.2	192.1	194.6	176.0	42.6	0.0	0.0
7	262.2	199.5	262.2	199.5	187.4	195.4	183.3	40.2	0.0	0.0
8	267.2	202.7	267.2	202.7	185.8	197.7	192.1	44.9	0.0	0.0
9	274.9	205.9	274.9	205.9	188.4	199.4	200.2	51.1	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.659	0.408	0.659	0.408	0.460	0.396	0.883	1.119
2	0.682	0.448	0.682	0.448	0.490	0.439	0.920	1.119
3	0.693	0.476	0.693	0.476	0.510	0.466	0.937	1.098
4	0.710	0.507	0.710	0.507	0.531	0.494	0.952	1.094
5	0.734	0.543	0.734	0.543	0.535	0.527	1.008	1.163
6	0.735	0.550	0.735	0.550	0.542	0.537	1.013	1.128
7	0.740	0.551	0.740	0.551	0.529	0.539	1.043	1.160
8	0.754	0.559	0.754	0.559	0.525	0.545	1.064	1.212
9	0.776	0.566	0.776	0.566	0.532	0.549	1.059	1.256

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	2.8	-4.7	12.3	0.584	0.000	0.122	0.122	0.046	0.046
2	10.00	1.2	-6.1	10.1	0.542	0.000	0.106	0.106	0.040	0.040
3	15.00	-0.3	-7.4	10.0	0.502	0.000	0.073	0.073	0.027	0.027
4	30.00	-0.8	-7.2	11.1	0.455	0.000	0.060	0.060	0.022	0.022
5	50.00	1.1	-4.4	11.5	0.426	0.000	0.048	0.048	0.017	0.017
6	70.00	-0.4	-5.0	9.4	0.416	0.000	0.055	0.055	0.019	0.019
7	85.00	0.4	-3.6	8.6	0.426	0.000	0.058	0.058	0.020	0.020
8	90.00	1.6	-2.2	9.7	0.429	0.000	0.067	0.067	0.023	0.023
9	95.00	2.0	-1.6	11.3	0.433	0.000	0.109	0.109	0.036	0.036

TABLE VI. - Continued.

(j) 90 Percent of design speed; reading 4204

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	53.3	14.7	53.3	14.7	365.8	1.000	18.94	0.971
2	23.741	23.546	52.0	13.7	52.0	13.7	364.3	1.000	19.06	0.965
3	23.482	23.317	52.7	13.6	52.7	13.6	364.9	1.000	19.07	0.965
4	22.695	22.629	49.1	14.9	49.1	14.9	358.6	1.000	19.43	0.970
5	21.615	21.684	47.6	15.5	47.6	15.5	355.7	1.000	19.48	0.969
6	20.518	20.726	47.6	14.0	47.6	14.0	351.0	1.000	19.28	0.970
7	19.682	19.995	47.6	13.6	47.6	13.6	349.7	1.000	19.26	0.970
8	19.398	19.751	48.3	15.1	48.3	15.1	351.1	1.000	19.52	0.962
9	19.111	19.505	49.0	15.8	49.0	15.8	352.9	1.000	19.78	0.950

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	249.4	151.2	249.4	151.2	149.0	146.3	200.0	38.5	0.0	0.0
2	251.5	155.9	251.5	155.9	154.8	151.5	198.2	37.0	0.0	0.0
3	253.9	157.4	253.9	157.4	154.0	153.0	201.9	37.1	0.0	0.0
4	251.2	171.6	251.2	171.6	164.5	165.9	189.8	44.1	0.0	0.0
5	262.5	177.2	262.5	177.2	177.0	170.8	193.8	47.3	0.0	0.0
6	260.4	177.1	260.4	177.1	175.5	171.9	192.4	42.8	0.0	0.0
7	265.8	179.8	265.8	179.8	179.4	174.8	196.2	42.2	0.0	0.0
8	272.8	183.3	272.8	183.3	181.4	177.0	203.8	47.6	0.0	0.0
9	280.0	185.6	280.0	185.6	183.6	178.5	211.4	50.7	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.680	0.401	0.680	0.401	0.406	0.388	0.981	1.334
2	0.688	0.414	0.688	0.414	0.423	0.403	0.978	1.314
3	0.694	0.418	0.694	0.418	0.421	0.406	0.994	1.340
4	0.693	0.462	0.693	0.462	0.454	0.446	1.008	1.245
5	0.730	0.479	0.730	0.479	0.493	0.462	0.965	1.265
6	0.729	0.482	0.729	0.482	0.491	0.468	0.979	1.246
7	0.748	0.491	0.748	0.491	0.505	0.477	0.974	1.253
8	0.768	0.500	0.768	0.500	0.511	0.483	0.976	1.296
9	0.788	0.505	0.788	0.505	0.517	0.486	0.972	1.336

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	10.4	2.9	13.4	0.644	0.000	0.[illegible]	0.110	0.041	0.041
2	10.00	9.1	1.8	12.3	0.626	0.000	0.128	0.128	0.048	0.048
3	15.00	9.7	2.7	12.1	0.628	0.000	0.125	0.126	0.047	0.047
4	30.00	6.7	0.4	13.0	0.534	0.000	0.110	0.110	0.040	0.040
5	50.00	5.5	-0.0	12.9	0.528	0.000	0.103	0.103	0.036	0.036
6	70.00	4.8	0.1	11.1	0.522	0.000	0.101	0.101	0.035	0.035
7	85.00	3.6	-0.4	10.5	0.522	0.000	0.097	0.097	0.033	0.033
8	90.00	4.0	0.2	12.0	0.523	0.000	0.118	0.118	0.039	0.039

TABLE VI. - Continued.

(j) 90 Percent of design speed; reading 4204

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	53.3	14.7	53.3	14.7	365.8	1.000	18.94	0.971
2	23.741	23.546	52.0	13.7	52.0	13.7	364.3	1.000	19.06	0.965
3	23.482	23.317	52.7	13.6	52.7	13.6	364.9	1.000	19.07	0.965
4	22.695	22.629	49.1	14.9	49.1	14.9	358.6	1.000	19.43	0.970
5	21.615	21.684	47.6	15.5	47.6	15.5	355.7	1.000	19.48	0.969
6	20.518	20.726	47.6	14.0	47.6	14.0	351.0	1.000	19.28	0.970
7	19.682	19.995	47.6	13.6	47.6	13.6	349.7	1.000	19.26	0.970
8	19.398	19.751	48.3	15.1	48.3	15.1	351.1	1.000	19.52	0.962
9	19.111	19.505	49.0	15.8	49.0	15.8	352.9	1.000	19.78	0.950

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	249.4	151.2	249.4	151.2	149.0	146.3	200.0	38.5	0.0	0.0
2	251.5	155.9	251.5	155.9	154.8	151.5	198.2	37.0	0.0	0.0
3	253.9	157.4	253.9	157.4	154.0	153.0	201.9	37.1	0.0	0.0
4	251.2	171.6	251.2	171.6	164.5	165.9	189.8	44.1	0.0	0.0
5	262.5	177.2	262.5	177.2	177.0	170.8	193.8	47.3	0.0	0.0
6	260.4	177.1	260.4	177.1	175.5	171.9	192.4	42.8	0.0	0.0
7	265.8	179.8	265.8	179.8	179.4	174.8	196.2	42.2	0.0	0.0
8	272.8	183.3	272.8	183.3	181.4	177.0	203.8	47.6	0.0	0.0
9	280.0	185.6	280.0	185.6	183.6	178.5	211.4	50.7	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.680	0.401	0.680	0.401	0.406	0.388	0.981	1.334
2	0.688	0.414	0.688	0.414	0.423	0.403	0.978	1.314
3	0.694	0.418	0.694	0.418	0.421	0.406	0.994	1.340
4	0.693	0.462	0.693	0.462	0.454	0.446	1.008	1.245
5	0.730	0.479	0.730	0.479	0.493	0.462	0.965	1.265
6	0.729	0.482	0.729	0.482	0.491	0.468	0.979	1.246
7	0.748	0.491	0.748	0.491	0.505	0.477	0.974	1.253
8	0.768	0.500	0.768	0.500	0.511	0.483	0.976	1.296
9	0.788	0.505	0.788	0.505	0.517	0.486	0.972	1.336

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	10.4	2.9	13.4	0.644	0.000	0.110	0.110	0.041	0.041
2	10.00	9.1	1.8	12.3	0.626	0.000	0.128	0.128	0.048	0.048
3	15.00	9.7	2.7	12.1	0.628	0.000	0.126	0.126	0.047	0.047
4	30.00	6.7	0.4	13.0	0.534	0.000	0.110	0.110	0.040	0.040
5	50.00	5.5	-0.0	12.9	0.528	0.000	0.103	0.103	0.036	0.036
6	70.00	4.8	0.1	11.1	0.522	0.000	0.101	0.101	0.035	0.035
7	85.00	3.6	-0.4	10.5	0.522	0.000	0.097	0.097	0.033	0.033
8	90.00	4.0	0.2	12.0	0.523	0.000	0.118	0.118	0.039	0.039
9	95.00	4.3	0.7	12.7	0.530	0.000	0.150	0.149	0.049	0.049

TABLE VI. - Continued.

(k) 80 Percent of design speed; reading 4194

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	50.2	15.5	50.2	15.5	346.5	1.000	16.28	0.977
2	23.741	23.546	50.0	12.9	50.0	12.9	346.0	1.000	16.30	0.981
3	23.482	23.317	49.0	12.3	49.0	12.3	344.9	1.000	16.39	0.984
4	22.695	22.629	46.5	14.0	46.5	14.0	341.6	1.000	16.73	0.984
5	21.615	21.684	45.2	13.3	45.2	13.3	338.3	1.000	16.84	0.986
6	20.518	20.726	44.9	12.6	44.9	12.6	336.1	1.000	16.84	0.986
7	19.682	19.805	45.5	12.2	45.5	12.2	335.5	1.000	16.86	0.986
8	19.398	19.751	46.4	13.6	46.4	13.6	336.5	1.000	16.98	0.984
9	19.111	19.505	47.2	14.9	47.2	14.9	338.1	1.000	17.18	0.971

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	215.2	133.5	215.2	133.5	137.7	128.7	165.3	35.7	0.0	0.0
2	216.0	139.9	216.0	139.9	139.0	136.3	165.3	31.3	0.0	0.0
3	218.1	145.7	218.1	145.7	143.1	142.4	164.6	31.1	0.0	0.0
4	225.7	158.6	225.7	158.6	155.5	153.9	163.6	38.3	0.0	0.0
5	231.2	166.1	231.2	166.1	162.9	161.6	164.1	38.3	0.0	0.0
6	234.7	170.2	234.7	170.2	166.1	166.1	165.8	37.3	0.0	0.0
7	239.0	174.0	239.0	174.0	167.6	170.1	170.4	36.8	0.0	0.0
8	243.9	177.6	243.9	177.6	168.1	172.6	176.7	41.7	0.0	0.0
9	250.4	179.7	250.4	179.7	170.1	173.7	183.8	46.1	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	PEAK SS MACH NO
1	0.597	0.362	0.597	0.362	0.382	0.349	0.934	1.106
2	0.600	0.380	0.600	0.380	0.386	0.371	0.981	1.103
3	0.607	0.398	0.607	0.398	0.398	0.388	0.995	1.094
4	0.633	0.436	0.633	0.436	0.436	0.423	0.990	1.081
5	0.653	0.460	0.653	0.460	0.460	0.447	0.992	1.079
6	0.666	0.473	0.666	0.473	0.472	0.462	1.000	1.078
7	0.680	0.485	0.680	0.485	0.477	0.474	1.015	1.092
8	0.695	0.495	0.695	0.495	0.479	0.481	1.027	1.127
9	0.713	0.500	0.713	0.500	0.484	0.483	1.022	1.165

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	7.3	-0.2	14.1	0.613	0.000	0.109	0.109	0.040	0.040
2	10.00	7.0	-0.2	11.5	0.591	0.000	0.089	0.089	0.033	0.033
3	15.00	6.1	-1.0	10.8	0.566	0.000	0.072	0.072	0.027	0.027
4	30.00	4.1	-2.3	12.1	0.505	0.000	0.067	0.067	0.024	0.024
5	50.00	3.1	-2.4	10.8	0.480	0.000	0.058	0.058	0.020	0.020
6	70.00	2.1	-2.6	9.7	0.468	0.000	0.056	0.056	0.019	0.019
7	85.00	1.5	-2.5	9.2	0.464	0.000	0.052	0.052	0.018	0.018
8	90.00	2.1	-1.7	10.5	0.460	0.000	0.060	0.060	0.020	0.020
9	95.00	2.5	-1.1	11.8	0.467	0.000	0.100	0.100	0.033	0.033

TABLE VI. - Continued.

(l) 70 Percent of design speed; reading 4202

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	25.1	14.1	25.1	14.1	310.9	1.000	11.95	0.945
2	23.741	23.546	24.3	10.9	24.3	10.9	311.2	1.000	12.37	0.967
3	23.482	23.317	24.0	10.3	24.0	10.3	312.3	1.000	12.76	0.984
4	22.695	22.629	23.1	9.3	23.1	9.3	311.7	1.000	13.14	0.966
5	21.615	21.684	25.1	9.8	25.1	9.8	312.8	1.000	13.33	0.974
6	20.518	20.726	26.2	10.6	26.2	10.6	313.1	1.000	13.50	0.967
7	19.682	19.995	28.6	11.7	28.6	11.7	315.2	1.000	13.72	0.983
8	19.398	19.751	28.2	12.2	28.2	12.2	315.4	1.000	13.85	0.981
9	19.111	19.505	30.2	12.4	30.2	12.4	316.9	1.000	14.02	0.973

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	173.1	166.0	173.1	166.0	156.8	161.0	73.3	40.3	0.0	0.0
2	187.8	192.2	187.8	192.2	171.3	188.7	77.2	36.5	0.0	0.0
3	199.8	208.5	199.8	208.5	182.5	205.2	81.2	37.1	0.0	0.0
4	212.1	217.9	212.1	217.9	195.1	215.0	83.1	35.2	0.0	0.0
5	215.2	230.4	215.2	230.4	194.9	227.0	91.1	39.3	0.0	0.0
6	218.0	236.2	218.0	236.2	195.6	232.1	96.3	43.4	0.0	0.0
7	229.3	244.8	229.3	244.8	201.3	239.7	109.7	49.6	0.0	0.0
8	232.6	246.7	232.6	246.7	204.9	241.1	109.9	51.9	0.0	0.0
9	238.1	246.6	238.1	246.6	205.8	240.9	119.7	52.8	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.502	0.480	0.502	0.480	0.455	0.466	1.027	0.502
2	0.547	0.560	0.547	0.560	0.498	0.550	1.102	0.547
3	0.583	0.610	0.583	0.610	0.532	0.600	1.124	0.583
4	0.622	0.640	0.622	0.640	0.572	0.632	1.102	0.622
5	0.631	0.679	0.631	0.679	0.571	0.669	1.165	0.631
6	0.639	0.697	0.639	0.697	0.574	0.685	1.187	0.639
7	0.673	0.723	0.673	0.723	0.591	0.708	1.191	0.673
8	0.683	0.729	0.683	0.729	0.602	0.712	1.177	0.683
9	0.699	0.727	0.699	0.727	0.604	0.710	1.170	0.699

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-17.9	-25.4	12.7	0.115	0.000	0.345	0.345	0.128	0.128
2	10.00	-18.7	-26.0	9.5	0.061	0.000	0.179	0.179	0.067	0.067
3	15.00	-19.0	-26.0	8.8	0.041	0.000	0.078	0.078	0.029	0.029
4	30.00	-19.3	-25.7	7.4	0.057	0.000	0.148	0.148	0.055	0.055
5	50.00	-17.1	-22.6	7.3	0.017	0.000	0.113	0.113	0.041	0.041
6	70.00	-16.6	-21.3	7.7	0.002	0.000	0.135	0.135	0.047	0.047
7	85.00	-15.4	-19.4	8.6	0.022	0.000	0.066	0.066	0.023	0.023
8	90.00	-16.1	-19.9	9.1	0.023	0.000	0.071	0.071	0.024	0.024
9	95.00	-14.5	-18.2	9.3	0.058	0.000	0.096	0.096	0.032	0.032

TABLE VI. - Continued.

(m) 70 Percent of design speed; reading 4203

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	29.2	14.5	29.2	14.5	314.2	1.000	12.51	0.974
2	23.741	23.546	27.7	10.9	27.7	10.9	314.8	1.000	12.92	0.984
3	23.482	23.317	27.6	10.3	27.6	10.3	315.2	1.000	13.22	0.990
4	22.695	22.629	26.1	9.2	26.1	9.2	314.4	1.000	13.51	0.982
5	21.615	21.684	28.5	9.5	28.5	9.5	314.9	1.000	13.68	0.988
6	20.518	20.726	29.9	10.1	29.9	10.1	315.8	1.000	13.85	0.985
7	19.682	19.995	31.9	10.8	31.9	10.8	317.0	1.000	14.04	0.988
8	19.398	19.751	31.2	11.2	31.2	11.2	317.3	1.000	14.15	0.986
9	19.111	19.505	33.4	12.2	33.4	12.2	318.9	1.000	14.29	0.982

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	175.9	151.7	175.9	151.7	153.6	146.9	85.7	38.0	0.0	0.0
2	189.9	173.4	189.9	173.4	168.1	170.3	88.3	32.8	0.0	0.0
3	198.9	185.4	198.9	185.4	176.3	182.4	92.0	33.1	0.0	0.0
4	205.7	195.0	205.7	195.0	184.6	192.5	90.6	31.3	0.0	0.0
5	210.8	207.4	210.8	207.4	185.2	204.5	100.7	34.2	0.0	0.0
6	213.2	215.2	213.2	215.2	184.9	211.9	106.2	37.6	0.0	0.0
7	224.9	222.7	224.9	222.7	191.0	218.8	118.7	41.6	0.0	0.0
8	227.7	225.4	227.7	225.4	194.7	221.1	118.0	44.0	0.0	0.0
9	232.7	228.0	232.7	228.0	194.1	222.8	128.2	48.3	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.508	0.435	0.508	0.435	0.443	0.421	0.956	0.555
2	0.550	0.499	0.550	0.499	0.487	0.490	1.013	0.550
3	0.577	0.536	0.577	0.536	0.512	0.527	1.035	0.577
4	0.599	0.566	0.599	0.566	0.538	0.559	1.043	0.599
5	0.614	0.604	0.614	0.604	0.540	0.595	1.105	0.614
6	0.621	0.627	0.621	0.627	0.539	0.618	1.146	0.645
7	0.657	0.650	0.657	0.650	0.558	0.638	1.146	0.725
8	0.665	0.658	0.665	0.658	0.569	0.645	1.136	0.691
9	0.679	0.664	0.679	0.664	0.567	0.649	1.148	0.772

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-13.8	-21.3	13.1	0.243	0.000	0.161	0.161	0.060	0.060
2	10.00	-15.2	-22.5	9.5	0.199	0.000	0.086	0.086	0.032	0.032
3	15.00	-15.4	-22.4	8.8	0.181	0.000	0.051	0.051	0.019	0.019
4	30.00	-16.2	-22.6	7.3	0.160	0.000	0.085	0.085	0.032	0.032
5	50.00	-13.6	-19.1	6.9	0.131	0.000	0.053	0.053	0.019	0.019
6	70.00	-13.0	-17.6	7.1	0.104	0.000	0.064	0.064	0.023	0.023
7	85.00	-12.1	-16.1	7.7	0.127	0.000	0.046	0.046	0.016	0.016
8	90.00	-13.1	-16.9	8.2	0.120	0.000	0.055	0.055	0.018	0.018
9	95.00	-11.3	-14.3	9.1	0.135	0.000	0.069	0.069	0.023	0.023

TABLE VI. - Continued.

(n) 70 Percent of design speed; reading 4201

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	34.0	14.1	34.0	14.1	319.1	1.000	13.06	0.985
2	23.741	23.546	33.2	11.3	33.2	11.3	319.4	1.000	13.43	0.987
3	23.482	23.317	31.7	10.4	31.7	10.4	318.7	1.000	13.64	0.991
4	22.695	22.629	31.1	9.9	31.1	9.9	317.9	1.000	13.90	0.992
5	21.615	21.684	32.1	9.8	32.1	9.8	318.1	1.000	14.07	0.993
6	20.518	20.726	33.8	10.2	33.8	10.2	318.6	1.000	14.18	0.993
7	19.682	19.995	34.7	10.7	34.7	10.7	319.1	1.000	14.37	0.989
8	19.398	19.751	35.2	11.3	35.2	11.3	319.8	1.000	14.45	0.989
9	19.111	19.505	37.4	12.6	37.4	12.6	321.4	1.000	14.59	0.985

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	177.7	141.0	177.7	141.0	147.3	136.8	99.3	34.3	0.0	0.0
2	190.0	158.1	190.0	158.1	159.1	155.0	104.0	30.9	0.0	0.0
3	195.7	167.6	195.7	167.6	166.4	164.8	103.0	30.2	0.0	0.0
4	203.5	179.6	203.5	179.6	174.3	176.9	105.0	30.9	0.0	0.0
5	206.6	189.3	206.6	189.3	174.9	186.6	109.9	32.1	0.0	0.0
6	212.1	197.2	212.1	197.2	176.3	194.1	117.9	34.8	0.0	0.0
7	219.5	203.3	219.5	203.3	180.4	199.7	125.0	37.7	0.0	0.0
8	222.7	206.7	222.7	206.7	181.9	202.7	128.5	40.4	0.0	0.0
9	227.8	210.8	227.8	210.8	181.0	205.7	138.3	45.8	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	PEAK SS MACH NO
1	0.509	0.400	0.509	0.400	0.422	0.388	0.928	0.659
2	0.546	0.450	0.546	0.450	0.457	0.441	0.975	0.688
3	0.564	0.479	0.564	0.479	0.479	0.471	0.991	0.676
4	0.589	0.516	0.589	0.516	0.504	0.508	1.015	0.684
5	0.598	0.545	0.598	0.545	0.506	0.537	1.067	0.711
6	0.615	0.569	0.615	0.569	0.511	0.560	1.101	0.753
7	0.637	0.587	0.637	0.587	0.524	0.577	1.107	0.782
8	0.647	0.597	0.647	0.597	0.528	0.585	1.114	0.796
9	0.661	0.608	0.661	0.608	0.525	0.593	1.136	0.856

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-9.0	-16.5	12.7	0.348	0.000	0.094	0.094	0.035	0.035
2	10.00	-9.8	-17.0	9.8	0.316	0.000	0.068	0.068	0.026	0.026
3	15.00	-11.2	-18.2	8.9	0.286	0.000	0.044	0.044	0.017	0.017
4	30.00	-11.3	-17.7	8.0	0.254	0.000	0.036	0.036	0.013	0.013
5	50.00	-10.0	-15.5	7.2	0.221	0.000	0.033	0.033	0.012	0.012
6	70.00	-9.1	-13.8	7.3	0.208	0.000	0.030	0.030	0.011	0.011
7	85.00	-9.2	-13.3	7.6	0.210	0.000	0.044	0.044	0.015	0.015
8	90.00	-9.1	-12.9	8.2	0.206	0.000	0.044	0.044	0.015	0.015
9	95.00	-7.3	-11.0	9.4	0.211	0.000	0.058	0.058	0.019	0.019

TABLE VI. - Continued.

(o) 70 Percent of design speed; reading 4198

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	38.4	14.0	38.4	14.0	322.5	1.000	13.49	0.983
2	23.741	23.546	37.4	11.4	37.4	11.4	322.6	1.000	13.77	0.987
3	23.482	23.317	36.0	10.7	36.0	10.7	321.8	1.000	13.94	0.992
4	22.695	22.629	34.3	10.1	34.3	10.1	320.3	1.000	14.17	0.995
5	21.615	21.684	35.2	9.5	35.2	9.5	319.9	1.000	14.29	0.995
6	20.518	20.726	36.6	9.9	36.6	9.9	320.0	1.000	14.37	0.994
7	19.682	19.995	37.8	10.9	37.8	10.9	320.6	1.000	14.56	0.992
8	19.398	19.751	38.7	11.4	38.7	11.4	321.3	1.000	14.65	0.992
9	19.111	19.505	39.9	12.6	39.9	12.6	322.7	1.000	14.78	0.988

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	180.9	132.3	180.9	132.3	141.7	128.4	112.5	32.1	0.0	0.0
2	189.9	147.4	189.9	147.4	151.0	144.5	115.2	29.2	0.0	0.0
3	194.4	156.2	194.4	156.2	157.2	153.5	114.3	29.0	0.0	0.0
4	200.4	168.2	200.4	168.2	165.6	165.7	112.9	29.4	0.0	0.0
5	203.8	176.2	203.8	176.2	166.5	173.8	117.5	29.1	0.0	0.0
6	208.8	182.7	208.8	182.7	167.6	179.9	124.5	31.6	0.0	0.0
7	216.0	189.8	216.0	189.8	170.7	186.4	132.3	35.7	0.0	0.0
8	219.8	193.5	219.8	193.5	171.6	189.6	137.4	38.3	0.0	0.0
9	224.6	197.4	224.6	197.4	172.2	192.6	144.2	43.2	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.516	0.373	0.516	0.373	0.404	0.361	0.906	0.749
2	0.543	0.416	0.543	0.416	0.431	0.408	0.957	0.765
3	0.557	0.443	0.557	0.443	0.451	0.435	0.976	0.757
4	0.577	0.480	0.577	0.480	0.477	0.472	1.000	0.743
5	0.588	0.504	0.588	0.504	0.480	0.497	1.044	0.768
6	0.603	0.523	0.603	0.523	0.484	0.515	1.073	9.803
7	0.625	0.544	0.625	0.544	0.494	0.534	1.092	0.838
8	0.636	0.555	0.636	0.555	0.496	0.544	1.105	0.864
9	0.649	0.565	0.649	0.565	0.498	0.552	1.119	0.900

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-4.5	-12.0	12.7	0.440	0.000	0.102	0.102	0.038	0.038
2	10.00	-5.6	-12.8	10.0	0.398	0.000	0.071	0.071	0.026	0.026
3	15.00	-6.9	-14.0	9.2	0.364	0.000	0.043	0.043	0.016	0.016
4	30.00	-8.1	-14.5	8.1	0.317	0.000	0.026	0.026	0.010	0.010
5	50.00	-6.9	-12.4	7.0	0.293	0.000	0.025	0.025	0.009	0.009
6	70.00	-6.3	-10.9	7.0	0.282	0.000	0.026	0.026	0.009	0.009
7	85 00	-6.1	-10.2	7.8	0.274	0.000	0.033	0.033	0.011	0.011
8	90.00	-5.6	-9.5	8.4	0.273	0.000	0.035	0.035	0.012	0.012
9	95.00	-4.8	-8.4	9.5	0.272	0.000	0.050	0.050	0.017	0.017

TABLE VI. - Continued.

(p) 70 Percent of design speed; reading 4196

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	43.1	14.1	43.1	14.1	326.3	1.000	13.89	0.984
2	23.741	23.546	42.4	11.7	42.4	11.7	326.1	1.000	14.08	0.988
3	23.482	23.317	41.3	11.3	41.3	11.3	325.4	1.000	14.21	0.992
4	22.695	22.629	39.1	11.0	39.1	11.0	323.5	1.000	14.42	0.993
5	21.615	21.684	38.3	9.6	38.3	9.6	321.8	1.000	14.44	0.994
6	20.518	20.726	39.8	11.1	39.8	11.1	322.2	1.000	14.65	0.993
7	19.682	19.995	40.6	11.5	40.6	11.5	322.5	1.000	14.82	0.991
8	19.398	19.751	41.5	12.0	41.5	12.0	323.0	1.000	14.86	0.992
9	19.111	19.505	43.3	13.2	43.3	13.2	324.6	1.000	14.99	0.987

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	182.4	125.1	182.4	125.1	133.3	121.3	124.6	30.4	0.0	0.0
2	188.5	137.7	188.5	137.7	139.2	134.9	127.1	27.9	0.0	0.0
3	192.1	145.5	192.1	145.5	144.4	142.6	126.7	28.5	0.0	0.0
4	197.7	156.4	197.7	156.4	153.3	153.6	124.8	29.9	0.0	0.0
5	199.2	161.3	199.2	161.3	156.4	159.0	123.5	27.0	0.0	0.0
6	208.4	171.2	208.4	171.2	160.1	168.0	133.3	33.1	0.0	0.0
7	215.1	178.4	215.1	178.4	163.2	174.8	140.1	35.6	0.0	0.0
8	217.7	181.0	217.7	181.0	163.1	177.1	144.2	37.6	0.0	0.0
9	222.9	184.8	222.9	184.8	162.2	179.9	152.9	42.2	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	PEAK SS MACH NO
1	0.517	0.350	0.517	0.350	0.378	0.339	0.910	0.832
2	0.536	0.386	0.536	0.386	0.396	0.378	0.969	0.847
3	0.547	0.409	0.547	0.409	0.411	0.401	0.988	0.841
4	0.566	0.442	0.566	0.442	0.439	0.434	1.002	0.826
5	0.572	0.458	0.572	0.458	0.449	0.451	1.017	0.810
6	0.599	0.487	0.599	0.487	0.461	0.478	1.049	0.865
7	0.620	0.508	0.620	0.508	0.476	0.498	1.071	0.893
8	0.628	0.516	0.628	0.516	0.470	0.504	1.086	0.913
9	0.642	0.526	0.642	0.526	0.467	0.512	1.109	0.964

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	0.1	-7.4	12.7	0.514	0.000	0.099	0.099	0.037	0.037
2	10.00	-0.5	-7.8	10.3	0.472	0.000	0.067	0.067	0.025	0.025
3	15.00	-1.7	-8.7	9.8	0.438	0.000	0.043	0.043	0.016	0.016
4	30.00	-3.2	-9.6	9.1	0.389	0.000	0.034	0.034	0.012	0.012
5	50.00	-3.8	-9.3	7.1	0.367	0.000	0.031	0.031	0.011	0.011
6	70.00	-3.1	-7.7	8.2	0.348	0.000	0.034	0.034	0.012	0.012
7	85.00	-3.3	-7.3	8.5	0.337	0.000	0.039	0.039	0.013	0.013
8	90.00	-2.8	-6.7	8.9	0.335	0.000	0.033	0.033	0.011	0.011
9	95.00	-1.4	-5.0	10.1	0.337	0.000	0.052	0.052	0.017	0.017

TABLE VI. - Continued.

(q) 70 Percent of design speed; reading 4195

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	48.1	14.6	48.1	14.6	329.4	1.000	14.07	0.981
2	23.741	23.546	47.9	12.0	47.9	12.0	328.7	1.000	14.15	0.986
3	23.482	23.317	47.2	12.1	47.2	12.1	328.2	1.000	14.22	0.989
4	22.695	22.629	44.5	12.1	44.5	12.1	326.1	1.000	14.37	0.991
5	21.615	21.684	41.7	11.1	41.7	11.1	323.9	1.000	14.53	0.991
6	20.518	20.726	41.8	12.7	41.8	12.7	324.4	1.000	14.93	0.987
7	19.682	19.995	42.5	11.9	42.5	11.9	323.8	1.000	14.96	0.989
8	19.398	19.751	43.6	12.3	43.6	12.3	324.1	1.000	14.95	0.991
9	19.111	19.505	44.8	13.6	44.8	13.6	325.5	1.000	15.08	0.984

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	181.0	116.5	181.0	116.5	120.9	112.7	134.7	29.3	0.0	0.0
2	183.7	125.7	183.7	125.7	123.2	123.0	136.3	26.2	0.0	0.0
3	186.0	132.1	186.0	132.1	126.3	129.1	136.5	27.7	0.0	0.0
4	190.6	142.1	190.6	142.1	135.8	139.0	133.7	29.9	0.0	0.0
5	197.2	150.6	197.2	150.6	147.1	147.8	131.3	29.0	0.0	0.0
6	211.4	164.8	211.4	164.8	157.5	160.8	141.0	36.3	0.0	0.0
7	214.0	168.8	214.0	168.8	157.8	165.2	144.5	35.0	0.0	0.0
8	215.7	170.8	215.7	170.8	156.1	166.9	148.8	36.2	0.0	0.0
9	220.8	173.8	220.8	173.8	156.8	169.0	155.5	40.8	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.510	0.323	0.510	0.323	0.341	0.313	0.932	0.908
2	0.519	0.350	0.519	0.350	0.348	0.342	0.998	0.918
3	0.526	0.369	0.526	0.369	0.357	0.360	1.022	0.916
4	0.542	0.399	0.542	0.399	0.386	0.390	1.023	0.890
5	0.564	0.425	0.564	0.425	0.420	0.417	1.005	0.864
6	0.606	0.466	0.606	0.466	0.452	0.455	1.021	0.917
7	0.615	0.479	0.615	0.479	0.454	0.468	1.046	0.925
8	0.620	0.484	0.620	0.484	0.449	0.473	1.069	0.948
9	0.635	0.492	0.635	0.492	0.451	0.478	1.078	0.985

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	5.1	-2.4	13.2	0.582	0.000	0.118	0.118	0.044	0.044
2	10.00	5.0	-2.3	10.6	0.546	0.000	0.085	0.085	0.032	0.032
3	15.00	4.3	-2.8	10.6	0.513	0.000	0.062	0.062	0.023	0.023
4	30.00	2.2	-4.2	10.2	0.458	0.000	0.047	0.047	0.017	0.017
5	50.00	-0.4	-5.9	8.6	0.425	0.000	0.044	0.044	0.016	0.016
6	70.00	-1.0	-5.7	9.8	0.395	0.000	0.058	0.058	0.020	0.020
7	85.00	-1.5	-5.5	8.9	0.387	0.000	0.048	0.048	0.016	0.016
8	90.00	-0.7	-4.5	9.2	0.385	0.000	0.039	0.039	0.013	0.013
9	95.00	0.1	-3.6	10.5	0.387	0.000	0.067	0.067	0.022	0.022

TABLE VI. - Continued.

(r) 60 Percent of design speed; reading 4215

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	49.8	16.6	49.8	16.6	318.8	1.000	12.82	0.985
2	23.741	23.546	50.1	14.4	50.1	14.4	318.5	1.000	12.85	0.991
3	23.482	23.317	49.5	13.8	49.5	13.8	318.2	1.000	12.87	0.995
4	22.695	22.629	44.8	10.3	44.8	10.3	315.8	1.000	13.04	0.992
5	21.615	21.684	40.3	10.1	40.3	10.1	313.2	1.000	13.15	0.995
6	20.518	20.726	40.9	12.8	40.9	12.8	314.2	1.000	13.46	0.991
7	19.682	19.995	41.4	12.2	41.4	12.2	313.9	1.000	13.50	0.992
8	19.398	19.751	42.3	12.6	42.3	12.6	314.3	1.000	13.52	0.993
9	19.111	19.505	43.9	13.8	43.9	13.8	315.1	1.000	13.60	0.987

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	153.3	99.8	153.3	99.8	99.0	95.6	117.1	28.5	0.0	0.0
2	154.6	107.6	154.6	107.6	99.2	104.2	118.6	26.8	0.0	0.0
3	156.1	112.4	156.1	112.4	101.4	109.1	118.7	26.8	0.0	0.0
4	160.4	120.6	160.4	120.6	113.9	118.6	113.0	21.6	0.0	0.0
5	168.0	129.9	168.0	129.9	128.0	127.9	108.7	22.7	0.0	0.0
6	180.3	144.0	180.3	144.0	136.4	140.4	118.0	31.9	0.0	0.0
7	184.5	148.0	184.5	148.0	138.5	144.7	121.9	31.2	0.0	0.0
8	186.5	149.7	186.5	149.7	138.0	146.1	125.5	32.8	0.0	0.0
9	190.6	151.9	190.6	151.9	137.3	147.5	132.1	36.3	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.436	0.281	0.436	0.281	0.282	0.269	0.966	0.803
2	0.440	0.303	0.440	0.303	0.283	0.294	1.050	0.812
3	0.445	0.317	0.445	0.317	0.289	0.308	1.076	0.810
4	0.460	0.342	0.460	0.342	0.326	0.337	1.041	0.759
5	0.484	0.371	0.484	0.371	0.369	0.365	0.999	0.720
6	0.521	0.412	0.521	0.412	0.394	0.402	1.030	0.771
7	0.534	0.424	0.534	0.424	0.401	0.415	1.045	0.783
8	0.540	0.429	0.540	0.429	0.399	0.419	1.059	0.800
9	0.552	0.435	0.552	0.435	0.397	0.422	1.074	0.839

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	6.8	-0.7	15.2	0.573	0.000	0.118	0.118	0.044	0.044
2	10.00	7.2	-0.1	13.0	0.532	0.000	0.070	0.070	0.026	0.026
3	15.00	6.6	-0.5	12.3	0.505	0.000	0.040	0.040	0.015	0.015
4	30.00	2.4	-4.0	8.4	0.462	0.000	0.062	0.062	0.023	0.023
5	50.00	-1.8	-7.3	7.5	0.413	0.000	0.034	0.034	0.012	0.012
6	70.00	-2.0	-6.7	9.9	0.370	0.000	0.052	0.052	0.018	0.018
7	85.00	-2.6	-6.6	9.1	0.366	0.000	0.043	0.043	0.015	0.015
8	90.00	-2.0	-5.9	9.6	0.366	0.000	0.041	0.041	0.014	0.014
9	95.00	-0.8	-4.4	10.7	0.372	0.000	0.069	0.069	0.023	0.023

TABLE VI. - Continued.

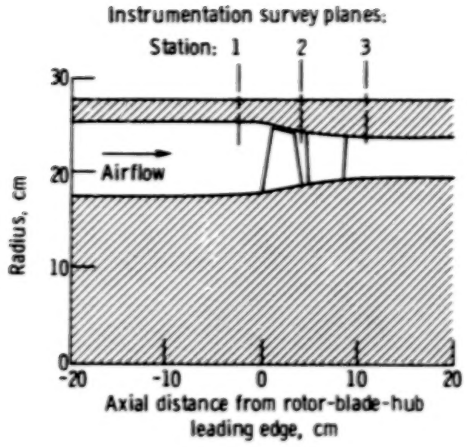
(s) 50 Percent of design speed; reading 4218

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.998	23.769	47.2	16.1	47.2	16.1	309.0	1.000	11.92	0.989
2	23.741	23.546	48.0	14.2	48.0	14.2	308.8	1.000	11.95	0.993
3	23.482	23.317	47.8	13.2	47.8	13.2	308.4	1.000	11.95	0.996
4	22.695	22.629	43.6	10.0	43.6	10.0	306.9	1.000	12.07	0.994
5	21.615	21.684	39.2	9.8	39.2	9.8	305.3	1.000	12.14	0.997
6	20.518	20.726	40.6	12.5	40.6	12.5	306.1	1.000	12.34	0.995
7	19.682	19.995	41.1	11.9	41.1	11.9	305.9	1.000	12.37	0.995
8	19.398	19.751	42.0	12.1	42.0	12.1	306.0	1.000	12.37	0.996
9	19.111	19.505	44.1	13.6	44.1	13.6	306.8	1.000	12.42	0.993

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	128.4	85.3	128.4	85.3	87.3	82.0	94.2	23.7	0.0	0.0
2	130.2	92.2	130.2	92.2	87.1	89.4	96.8	22.7	0.0	0.0
3	130.4	96.0	130.4	96.0	87.6	93.5	96.5	21.9	0.0	0.0
4	133.7	104.0	133.7	104.0	96.8	102.4	92.2	18.1	0.0	0.0
5	139.9	111.3	139.9	111.3	108.4	109.7	88.5	19.0	0.0	0.0
6	150.4	122.8	150.4	122.8	114.2	119.9	97.8	26.5	0.0	0.0
7	153.8	126.5	153.8	126.5	115.8	123.8	101.2	26.0	0.0	0.0
8	154.8	127.7	154.8	127.7	115.1	124.9	103.6	26.7	0.0	0.0
9	158.2	130.1	158.2	130.1	113.7	126.5	110.0	30.7	0.0	0.0

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.369	0.244	0.369	0.244	0.251	0.234	0.940	0.646
2	0.375	0.264	0.375	0.264	0.251	0.256	1.027	0.664
3	0.376	0.275	0.376	0.275	0.252	0.267	1.067	0.661
4	0.386	0.299	0.386	0.299	0.280	0.294	1.058	0.622
5	0.406	0.321	0.406	0.321	0.314	0.316	1.012	0.588
6	0.437	0.354	0.437	0.354	0.332	0.346	1.049	0.642
7	0.447	0.366	0.447	0.366	0.337	0.358	1.069	0.652
8	0.450	0.369	0.450	0.369	0.335	0.361	1.085	0.663
9	0.460	0.376	0.460	0.376	0.330	0.365	1.113	0.702

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	4.2	-3.3	14.7	0.548	0.000	0.120	0.120	0.044	0.044
2	10.00	5.1	-2.2	12.8	0.510	0.000	0.079	0.079	0.029	0.029
3	15.00	4.8	-2.2	11.7	0.482	0.000	0.040	0.040	0.015	0.015
4	30.00	1.3	-5.1	8.1	0.430	0.000	0.057	0.057	0.021	0.021
5	50.00	-2.9	-8.4	7.3	0.385	0.000	0.032	0.032	0.011	0.011
6	70.00	-2.3	-7.0	9.6	0.351	0.000	0.044	0.044	0.015	0.015
7	85.00	-2.8	-6.8	8.8	0.345	0.000	0.037	0.037	0.012	0.012
8	90.00	-2.3	-6.2	9.0	0.344	0.000	0.029	0.029	0.010	0.010
9	95.00	-0.7	-4.3	10.5	0.345	0.000	0.050	0.050	0.017	0.017

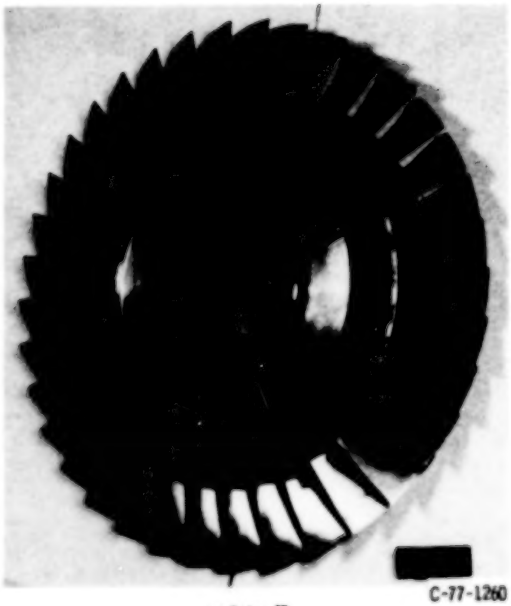


Flow path coordinates

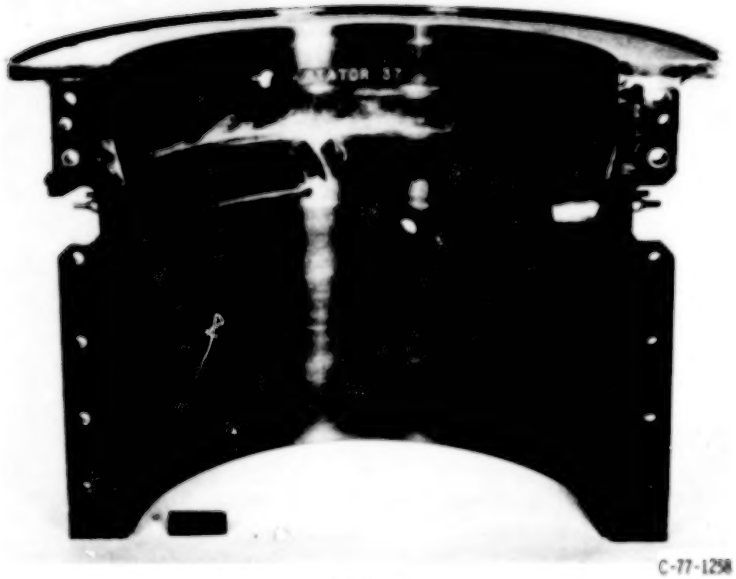
Inner		Outer	
Axial distance, cm	Radius, cm	Axial distance, cm	Radius, cm
-22.860	17.526	-22.860	25.654
-15.400	17.526	-15.400	25.654
-7.620	17.526	-7.620	25.654
-2.568	17.539	-2.568[a]	25.643
0	17.760	0	25.400
1.854	18.255	.632	25.247
4.137	18.714	1.854	24.925
4.859	18.821	1.974	24.682
6.566	19.035	3.282	24.511
8.890	19.279	4.445	24.265
10.640	19.360	4.859	24.232
12.700	19.431	6.538	24.145
15.400	19.431	8.628	24.011
		8.890	23.993
		10.640[a]	23.851
		12.700	23.749
		15.400	23.749

[a] Survey planes.

Figure 1. - Flow path and instrumentation stations.



(a) Rotor 37.



(b) Stator 37.

Figure 2. - Stage blade rows.

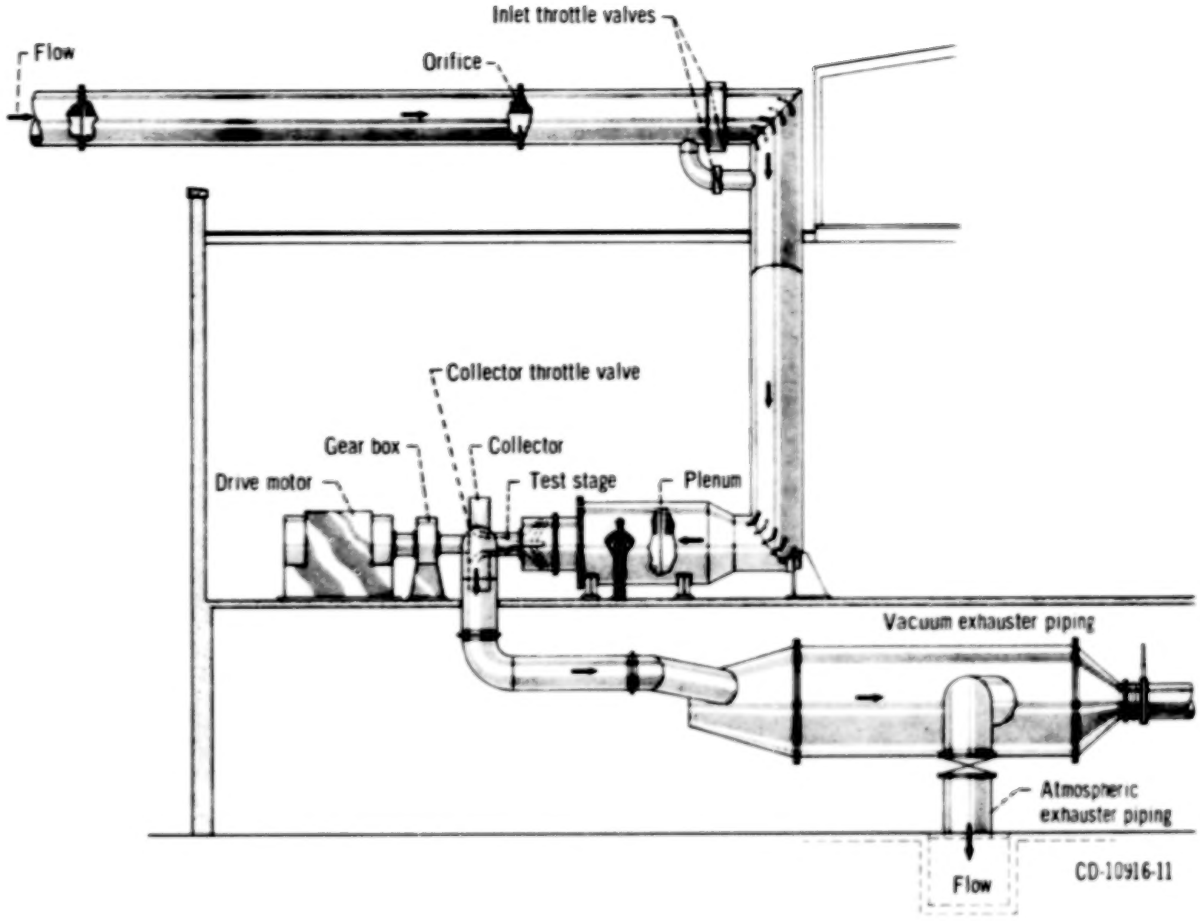
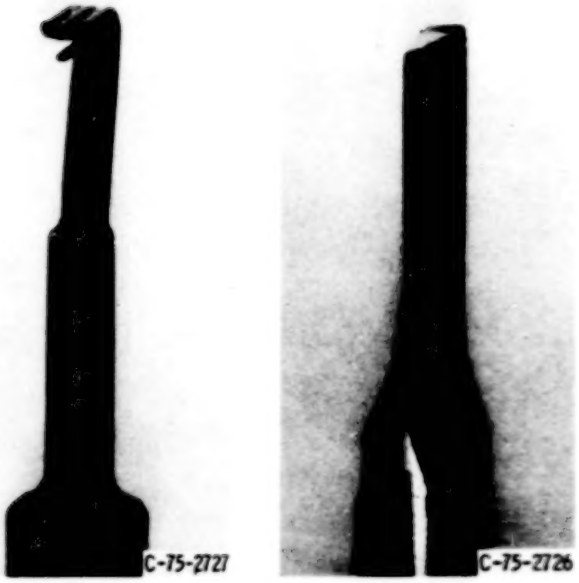


Figure 3. - Compressor test facility.



(a) Combination probe (total pressure, temperature, and flow angle).

(b) Wedge probe (static pressure and flow angle).

Figure 4. - Traverse probes.

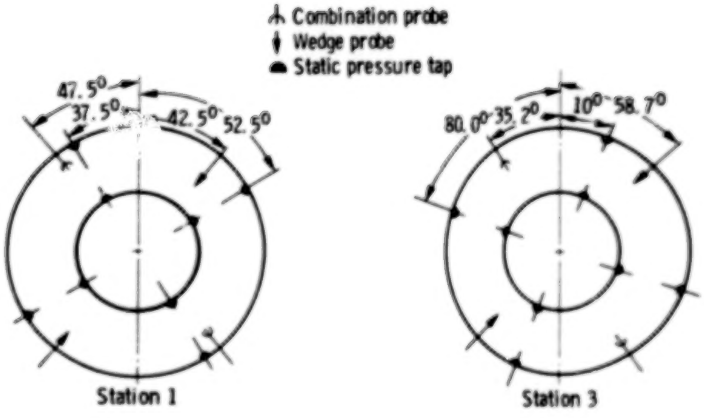


Figure 5. - Circumferential location of instrumentation at measuring stations (facing upstream).

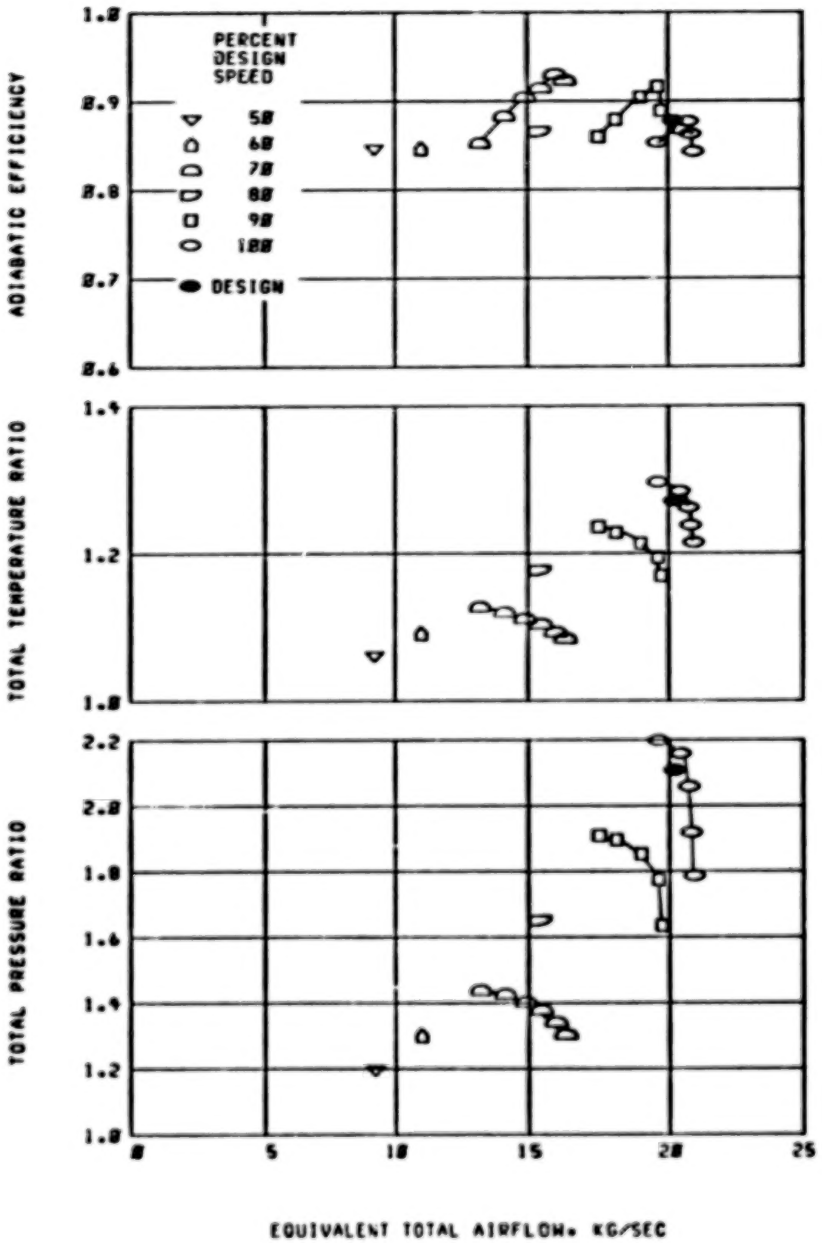


Figure 6. - Overall performance for rotor 37.

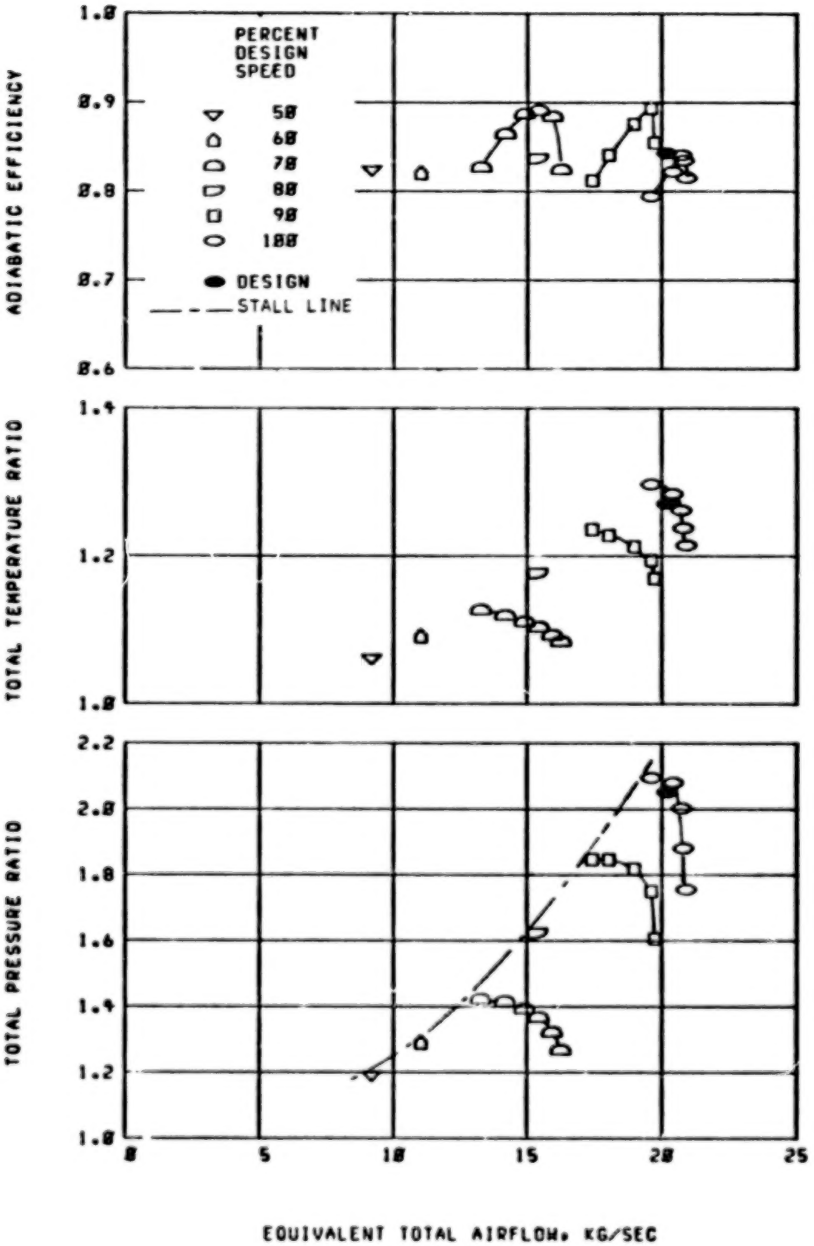


Figure 7. - Overall performance for stage 37.

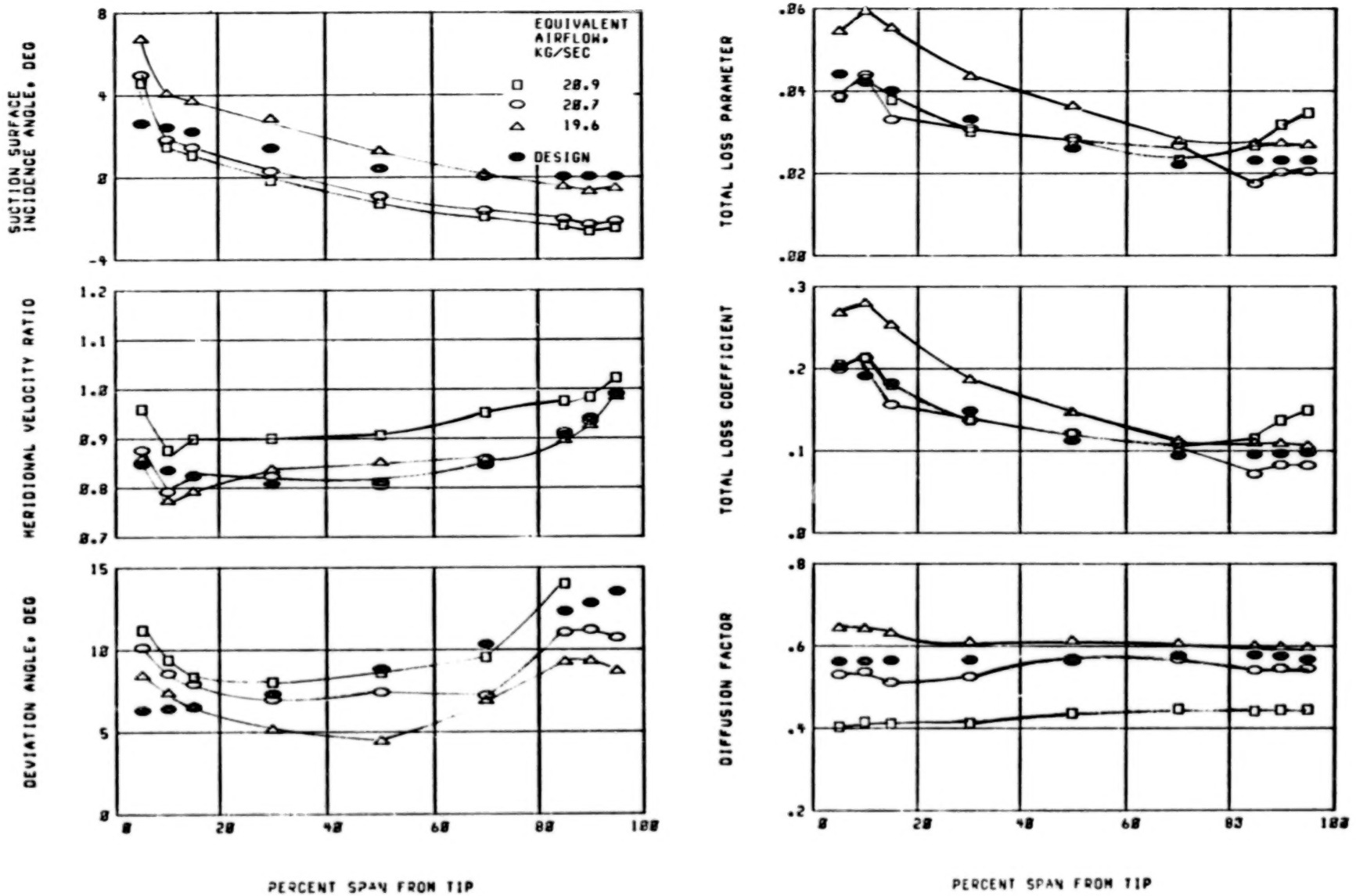


Figure 8. - Radial distribution of performance for rotor 37. 100 Percent of design speed.

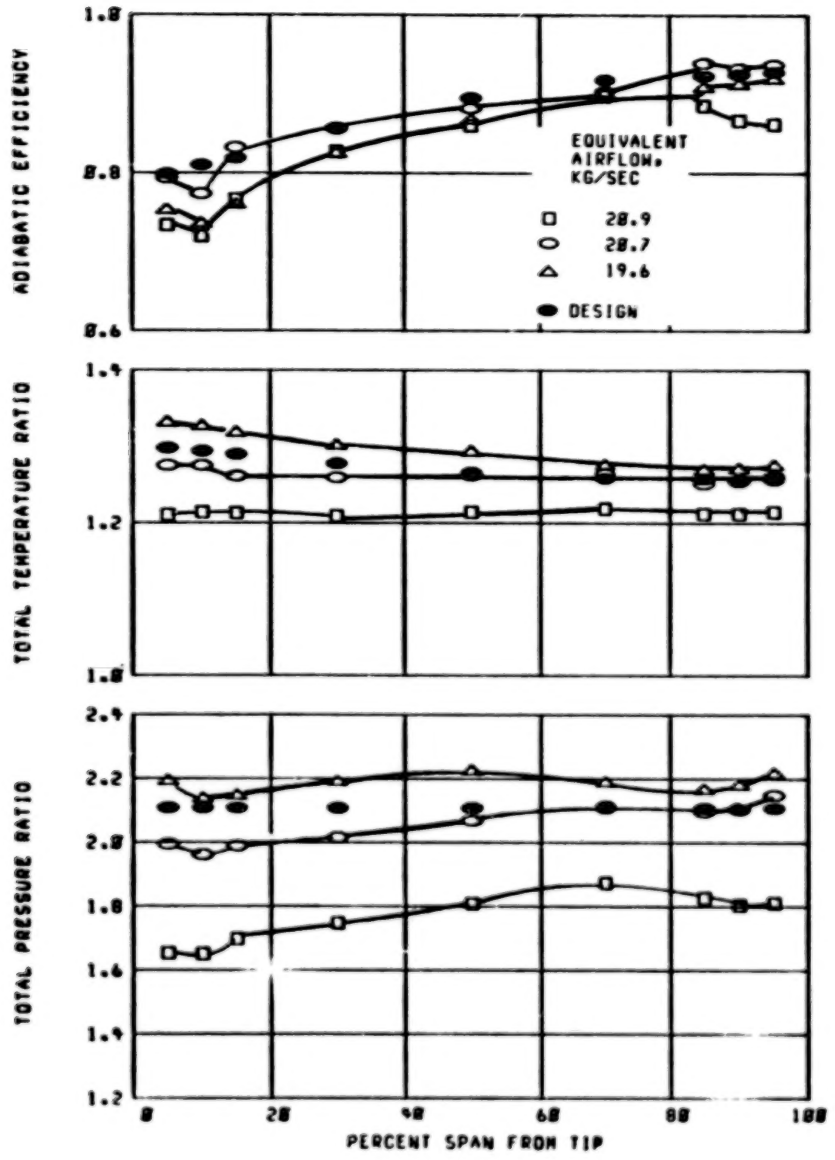


Figure 8. - Concluded.

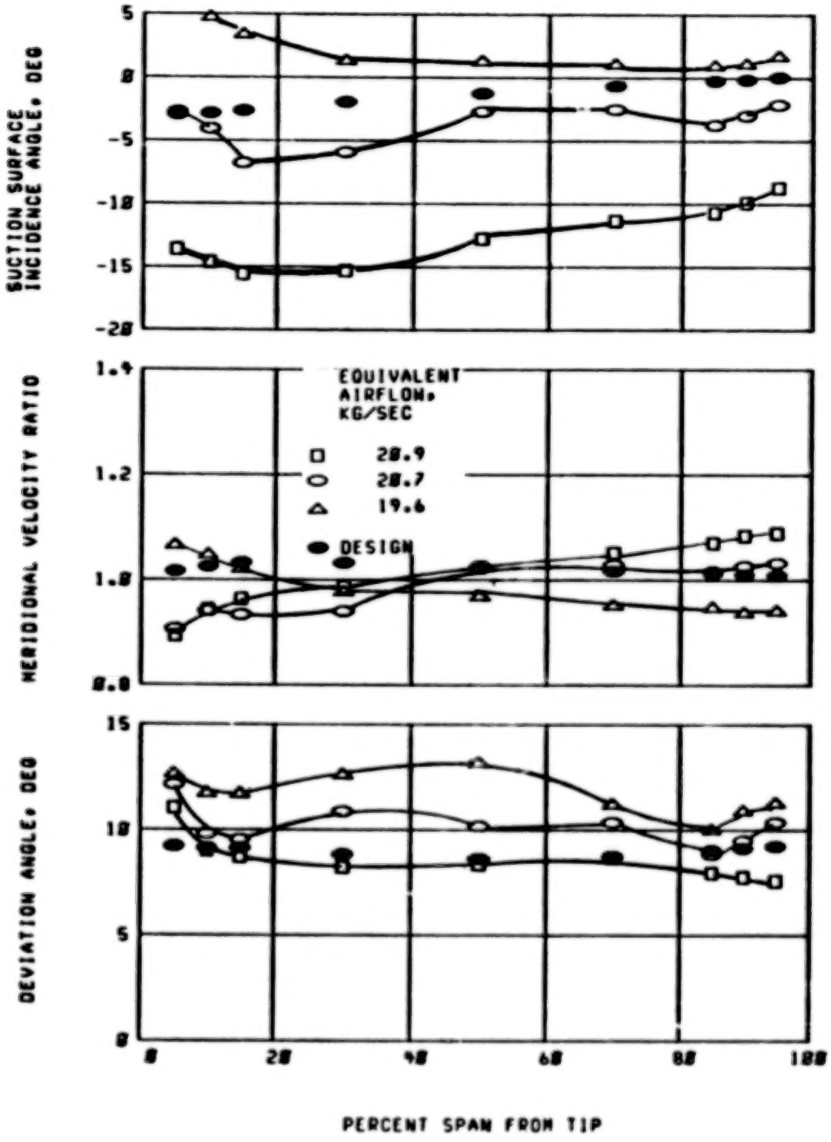


Figure 9. - Radial distribution of performance for stator 37. 100 Percent of design speed.

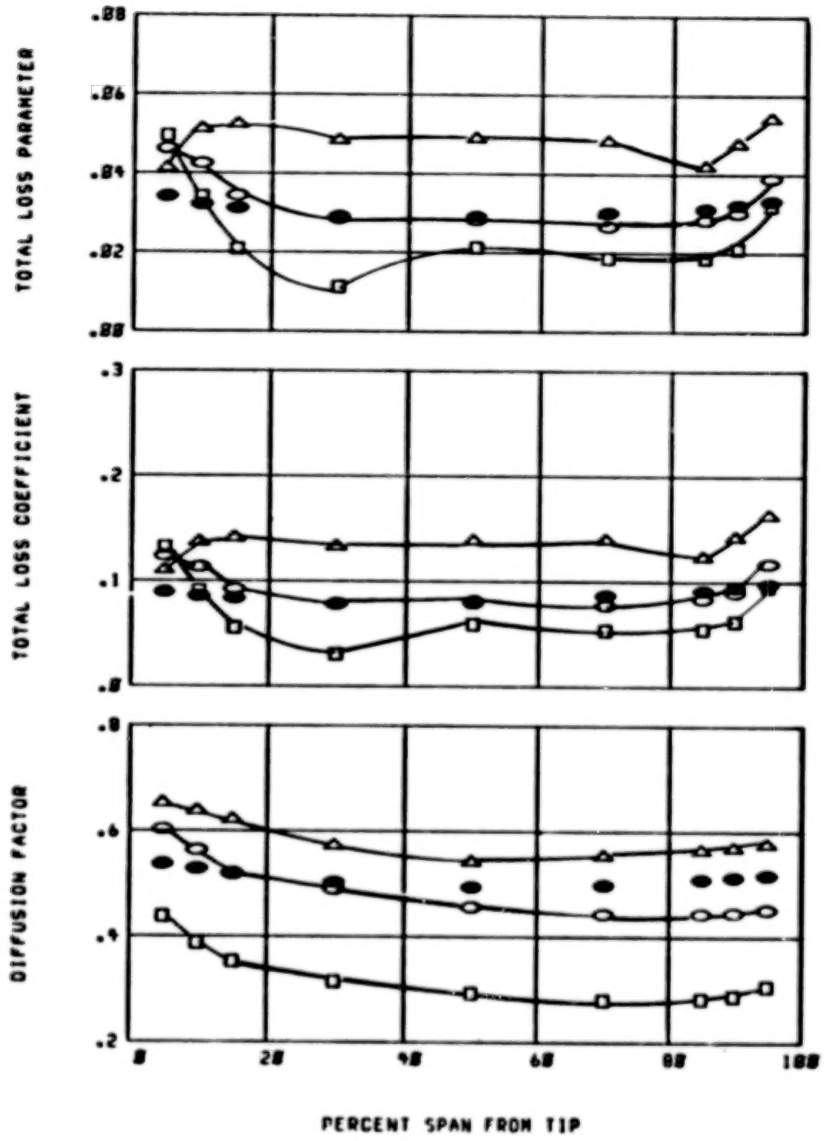
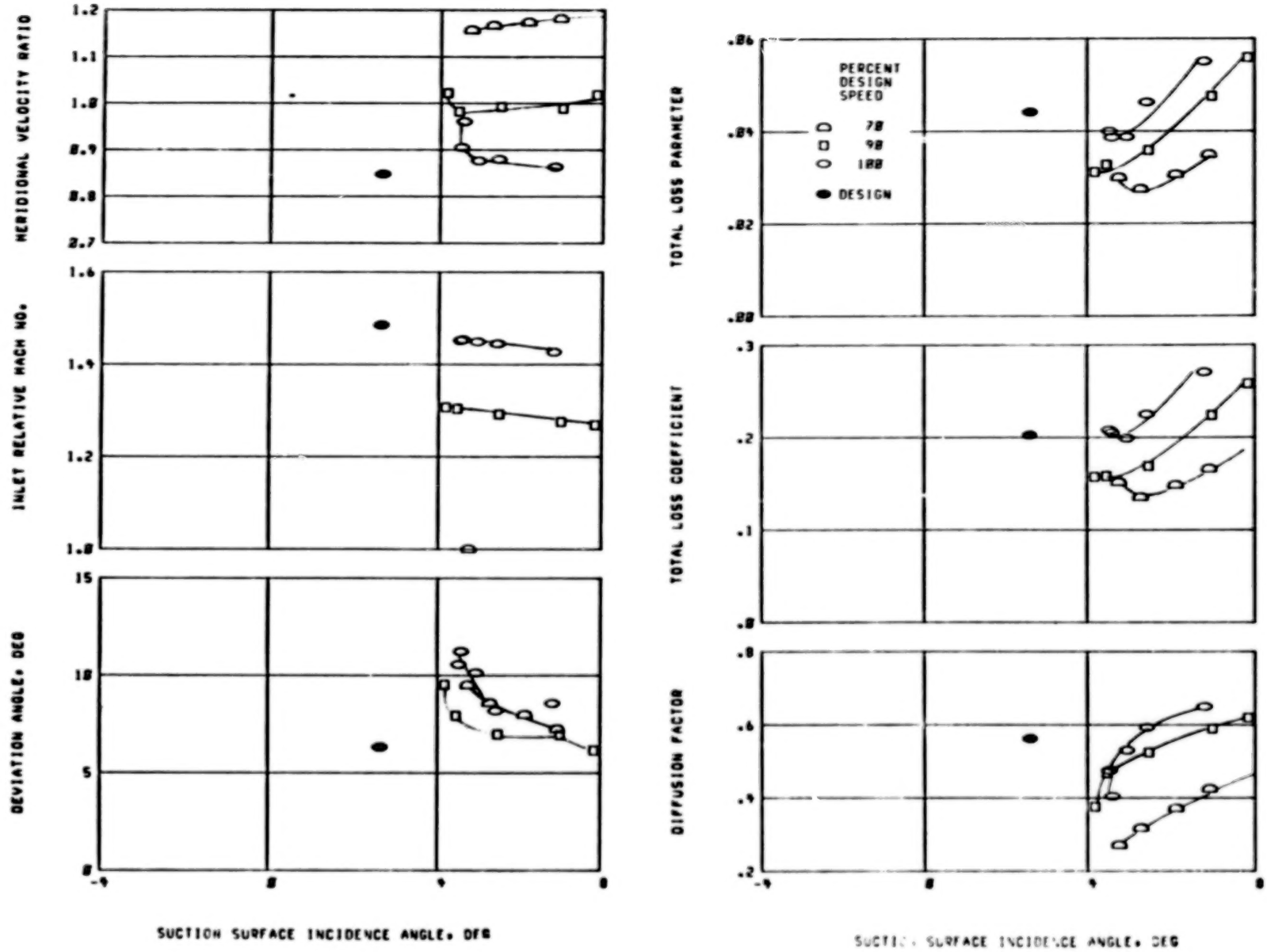
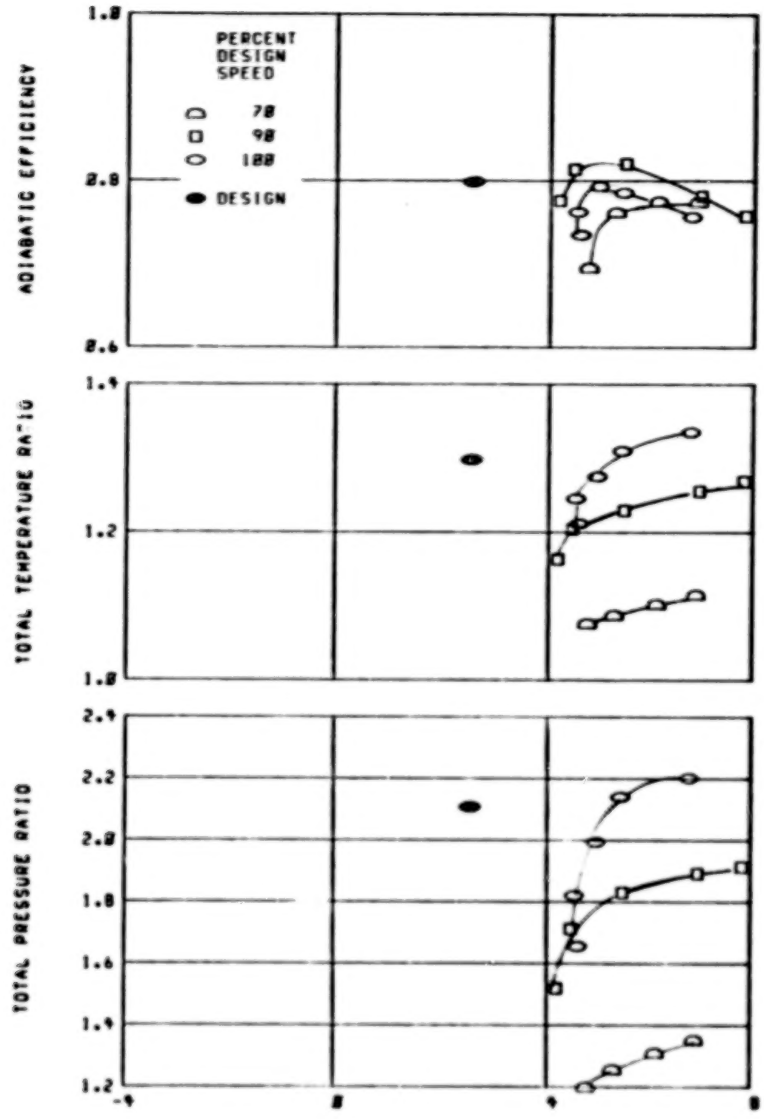


Figure 9. - Concluded.



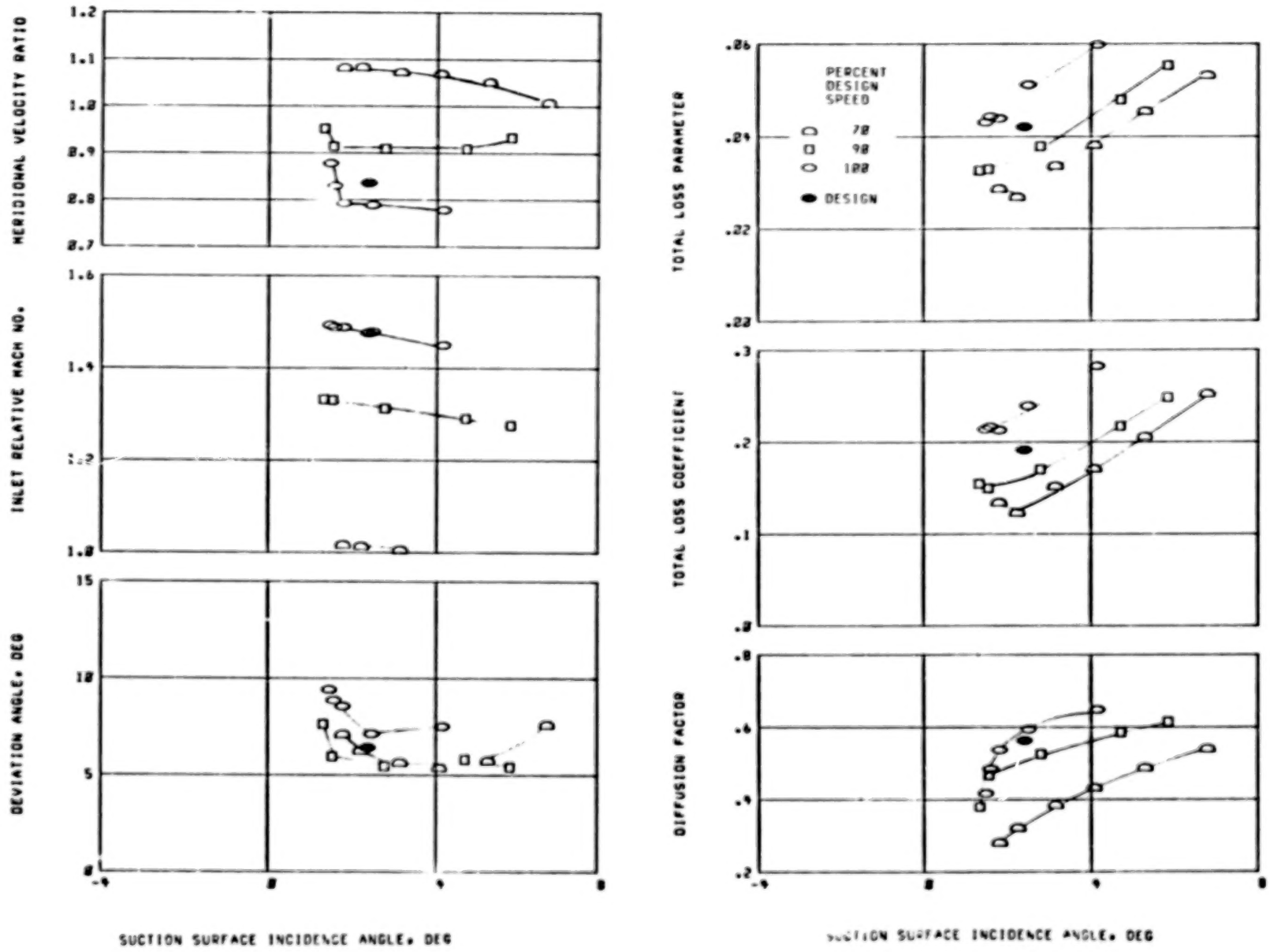
(a) 5 Percent span.

Figure 10. - Blade-element performance for rotor 37.



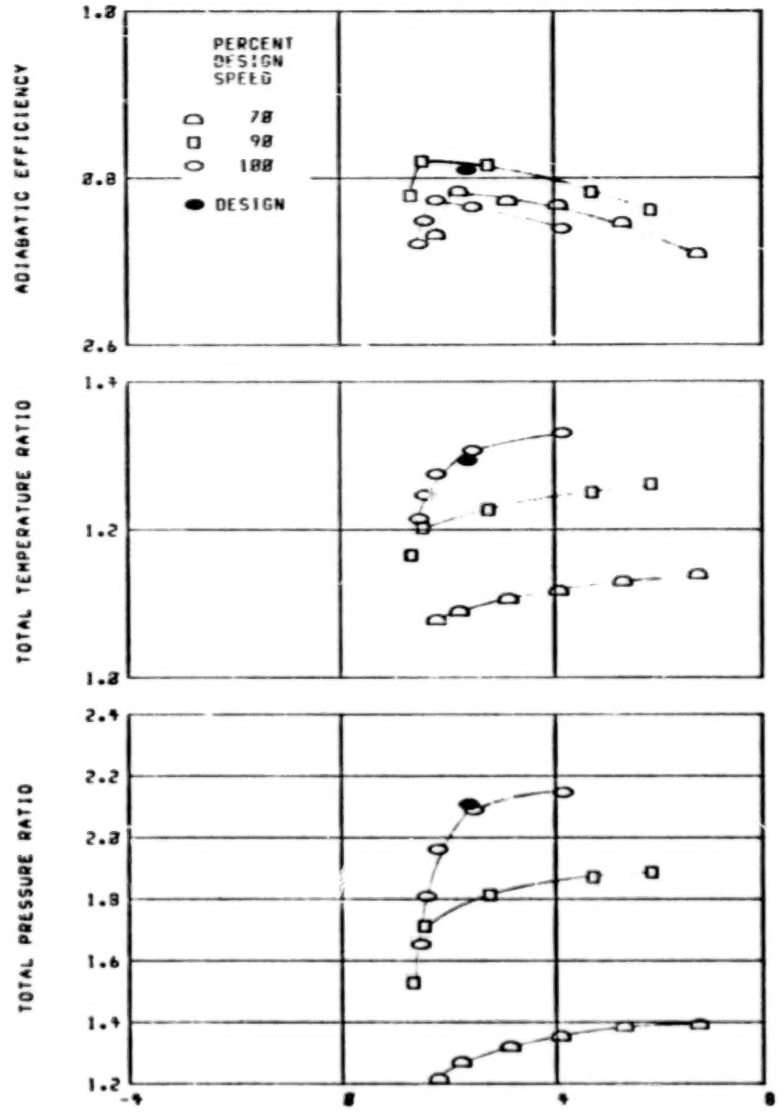
(a) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 37.



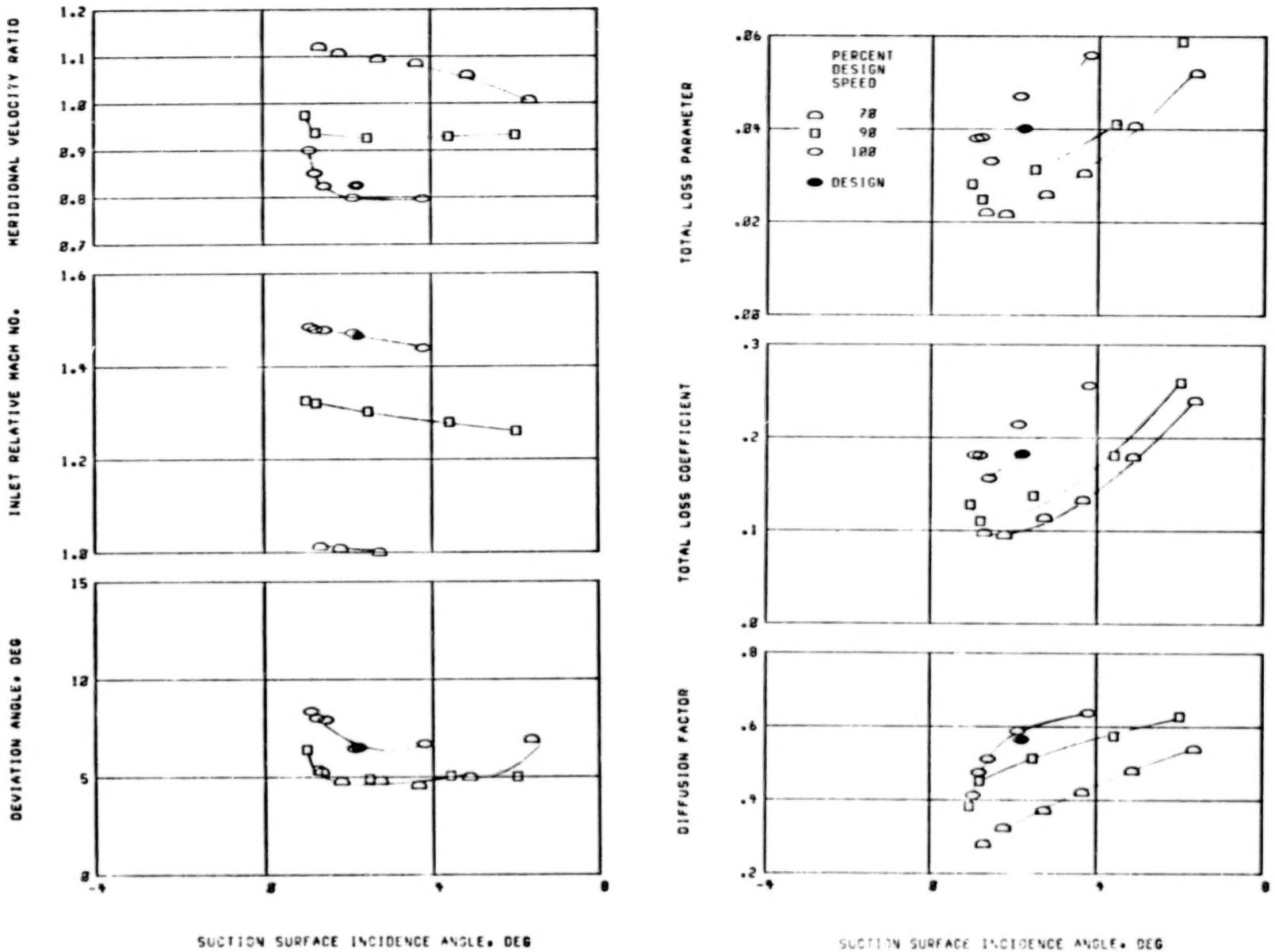
(b) 10 Percent span.

Figure 10. - Continued. Blade-element performance for rotor 37.



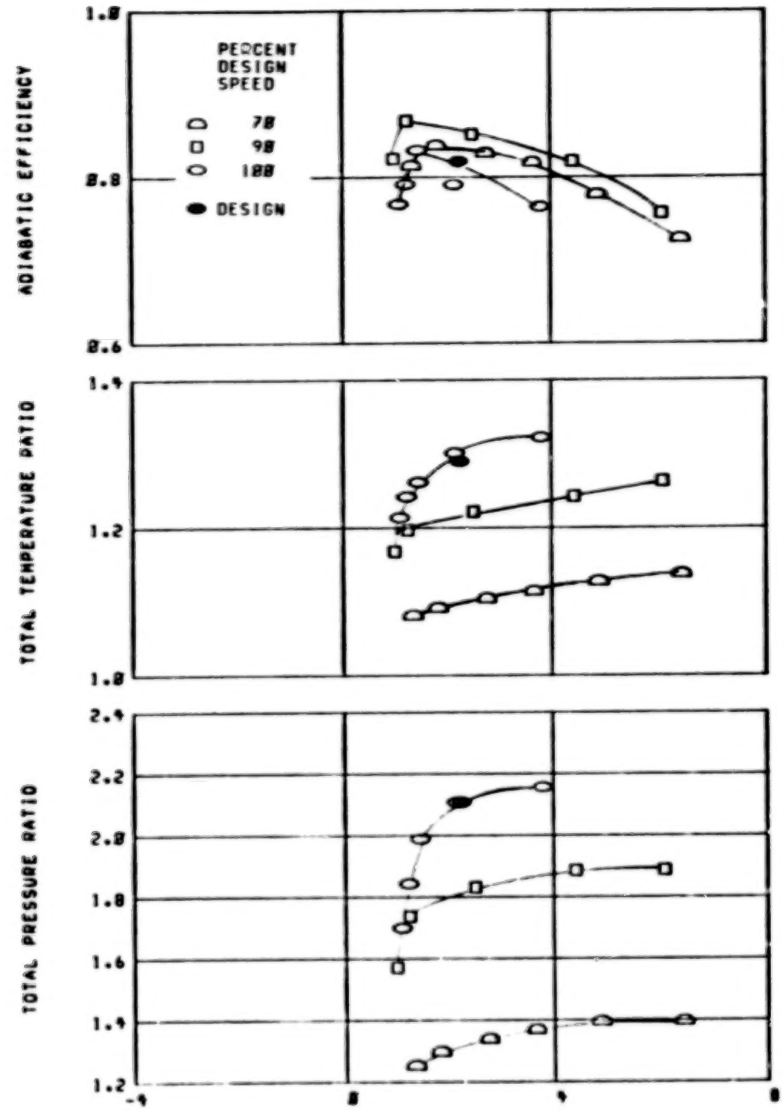
(b) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 37.



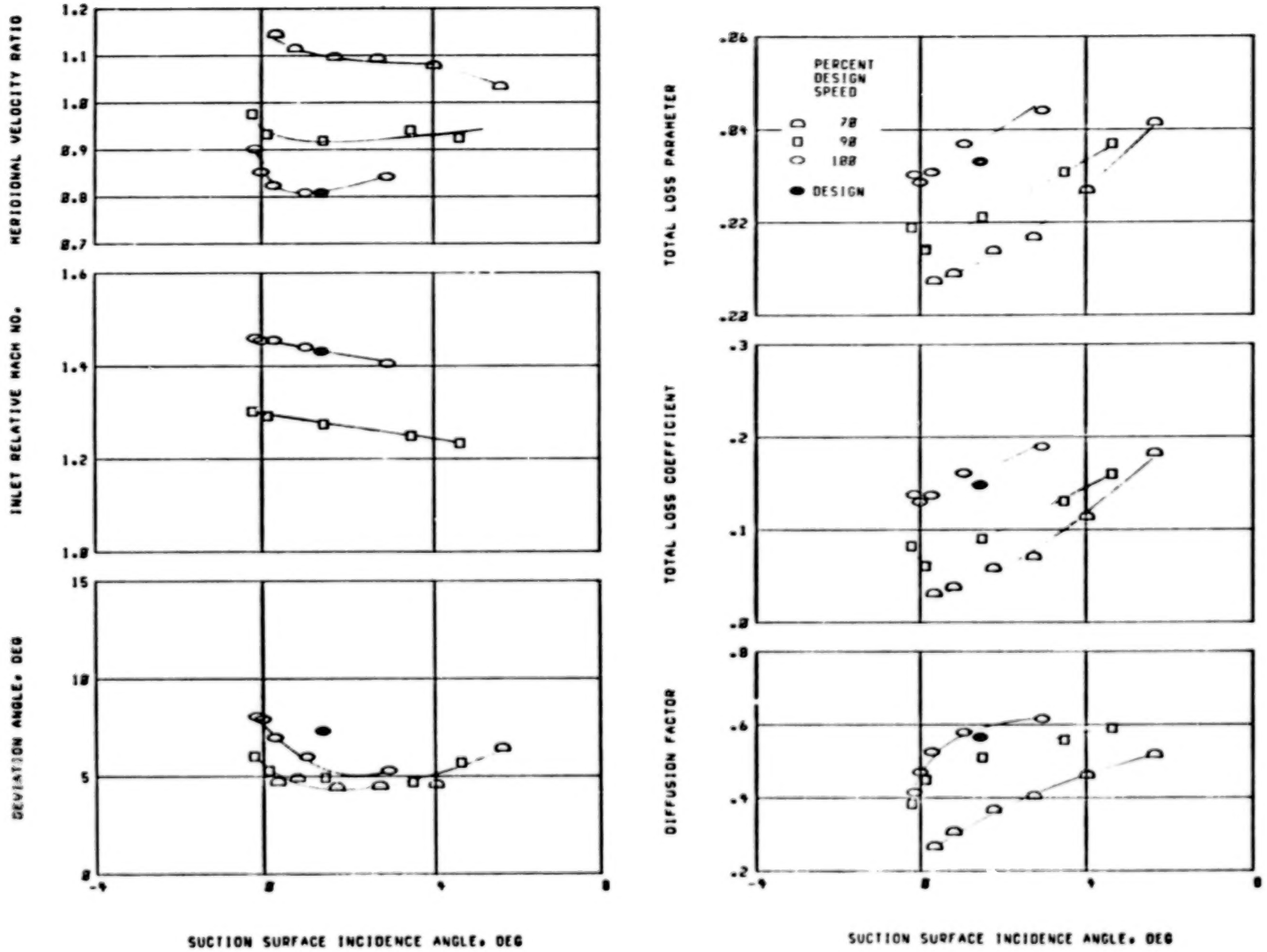
(c) 15 Percent span.

Figure 10. - Continued. Blade-element performance for rotor 37.



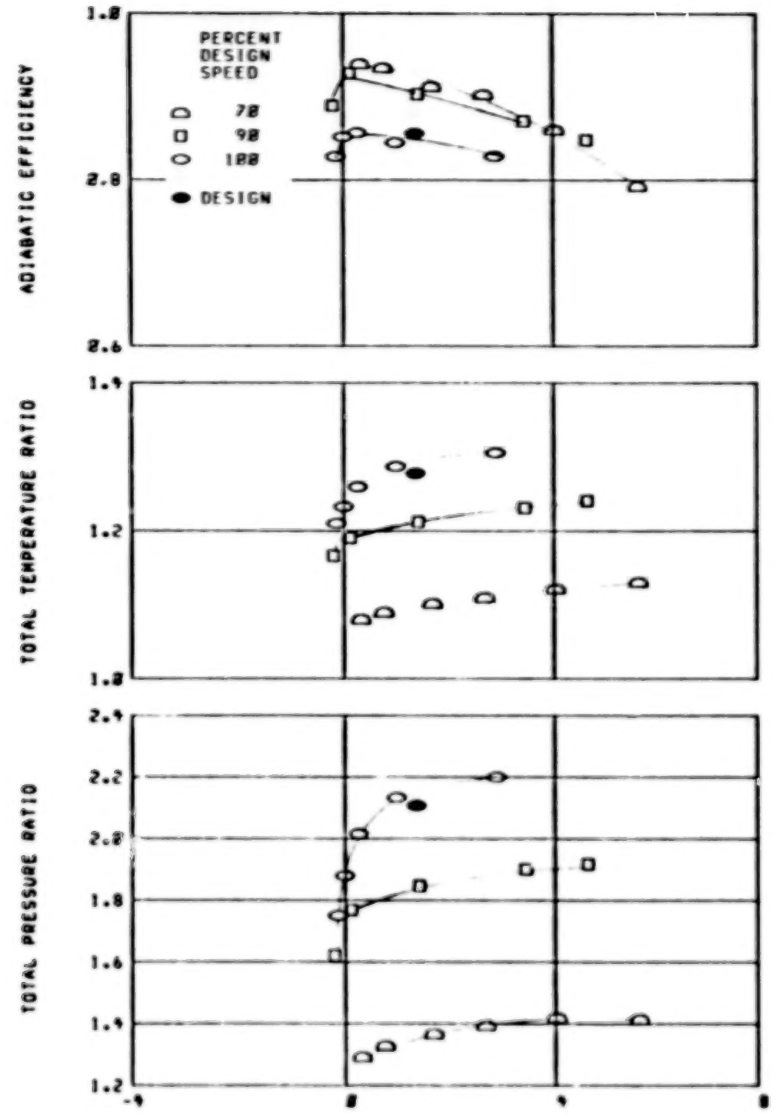
(c) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 37.



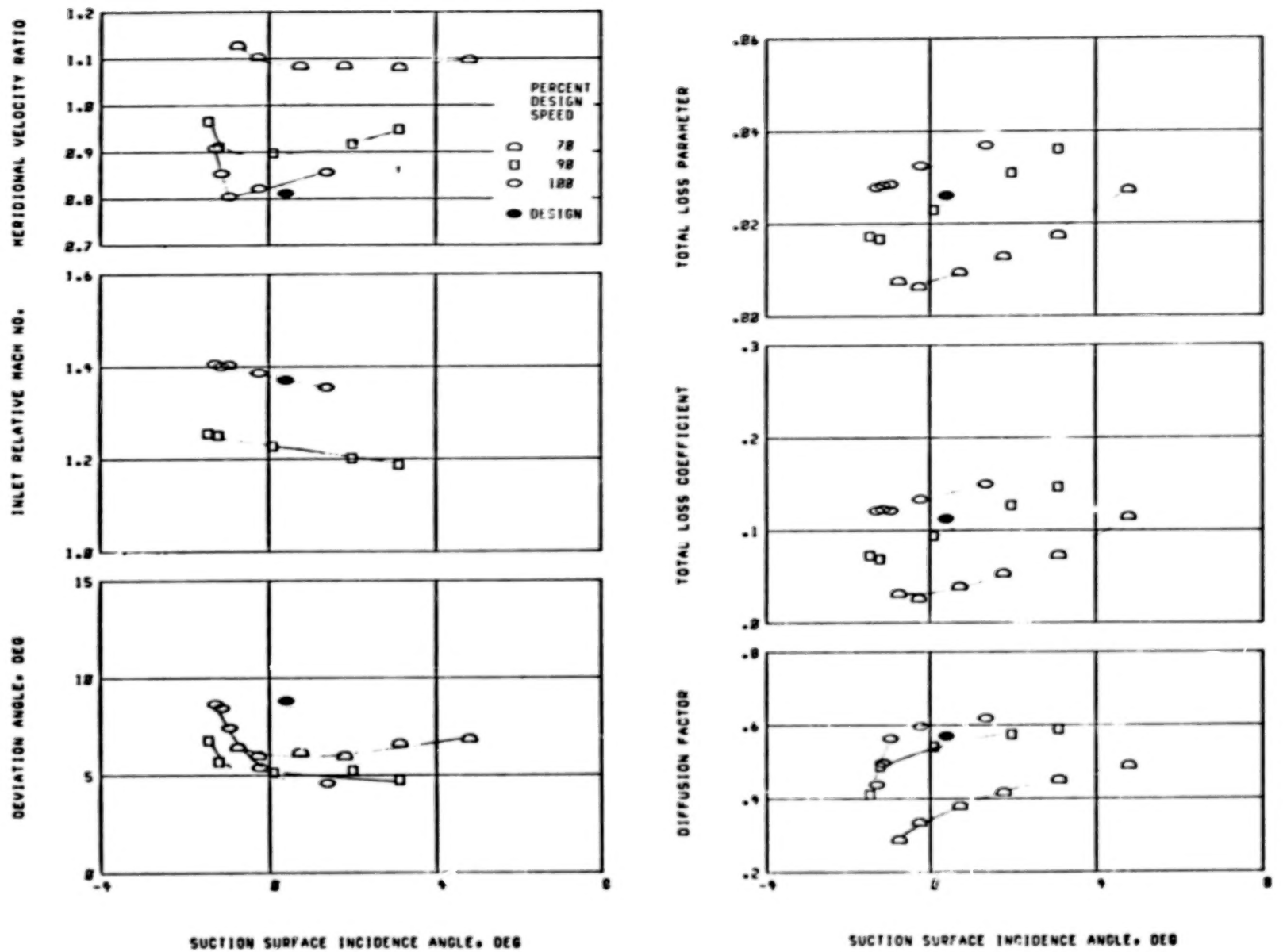
(d) 30 Percent span.

Figure 10. - Continued. Blade-element performance for rotor 37.



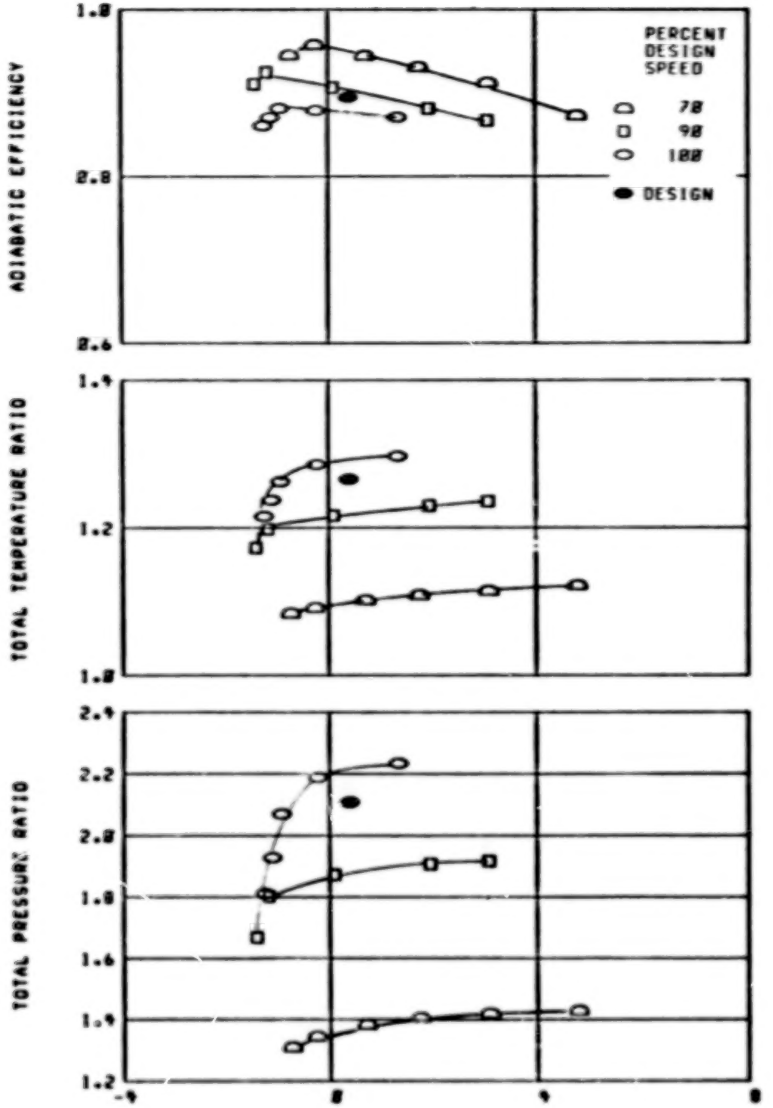
(d) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 32.



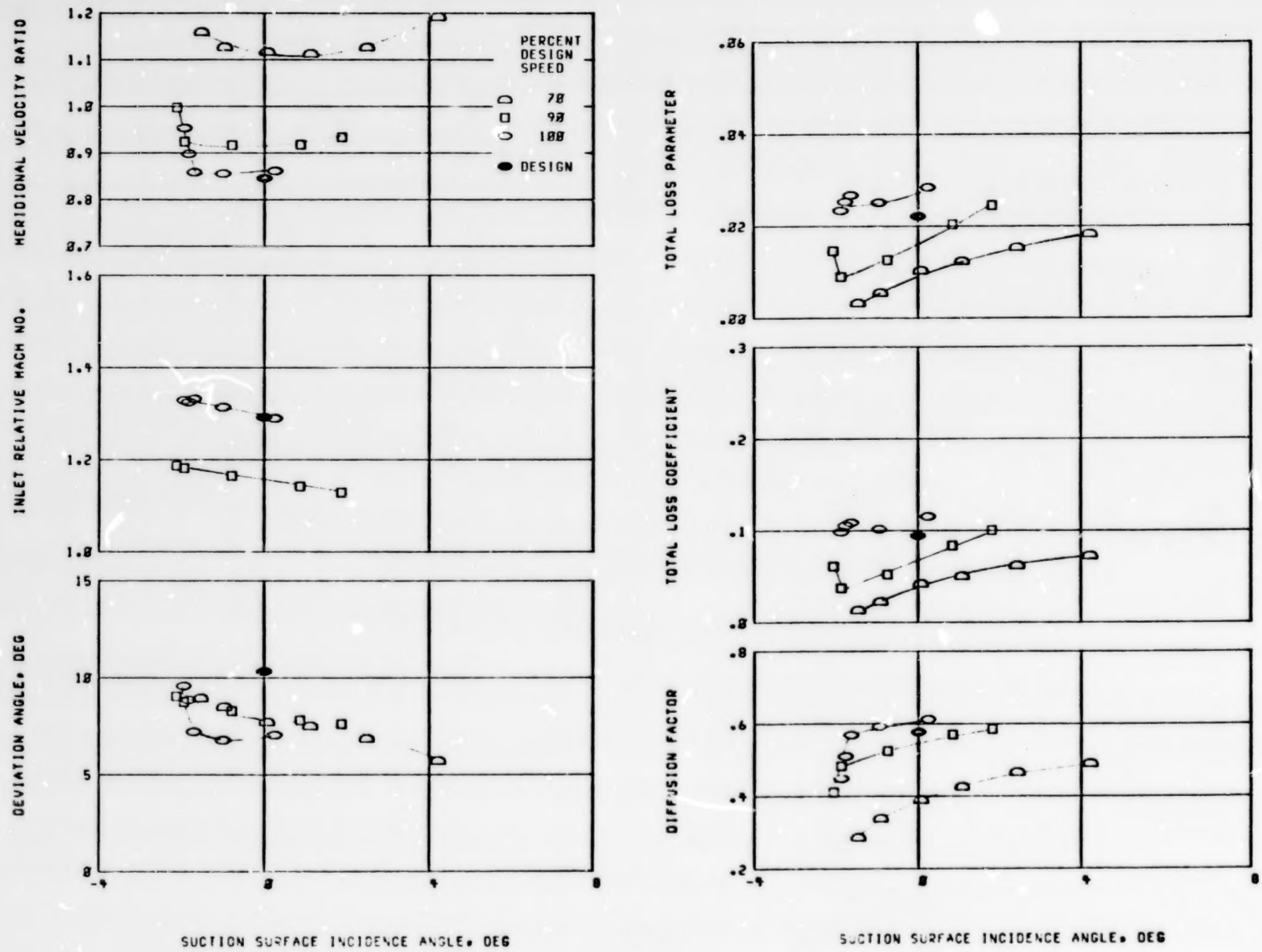
(e) 50 Percent span.

Figure 10. - Continued. Blade-element performance for rotor 37.



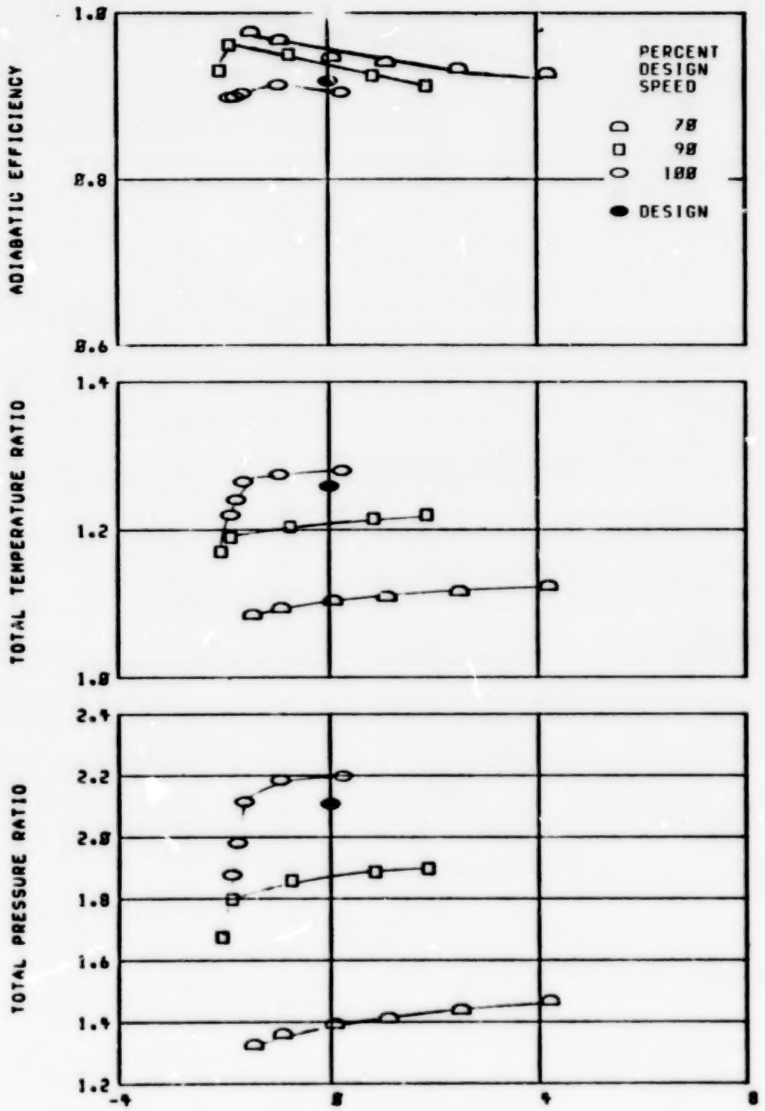
(e) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 32.



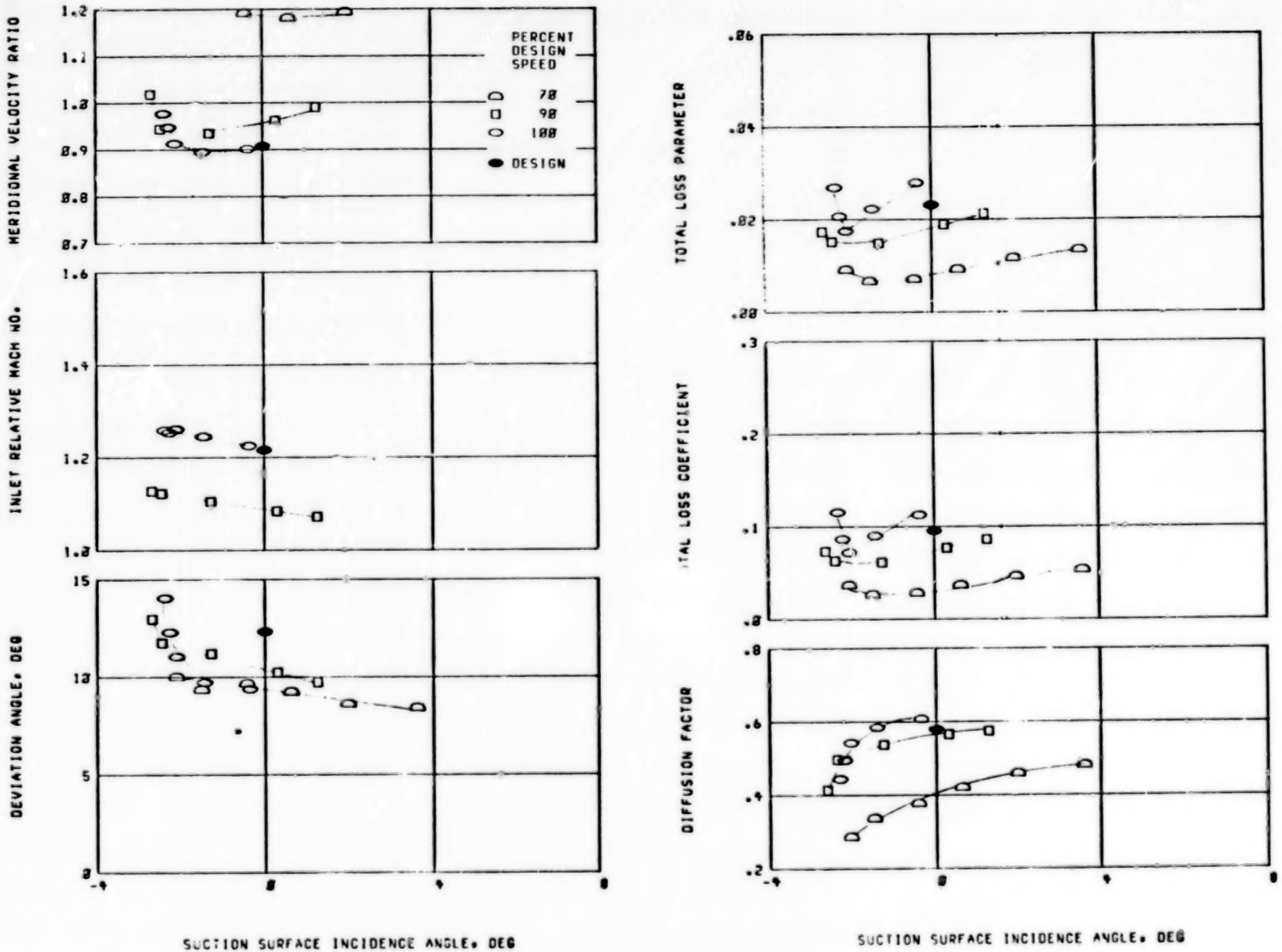
(f) 70 Percent span.

Figure 10. - Continued. Blade-element performance for rotor 37.



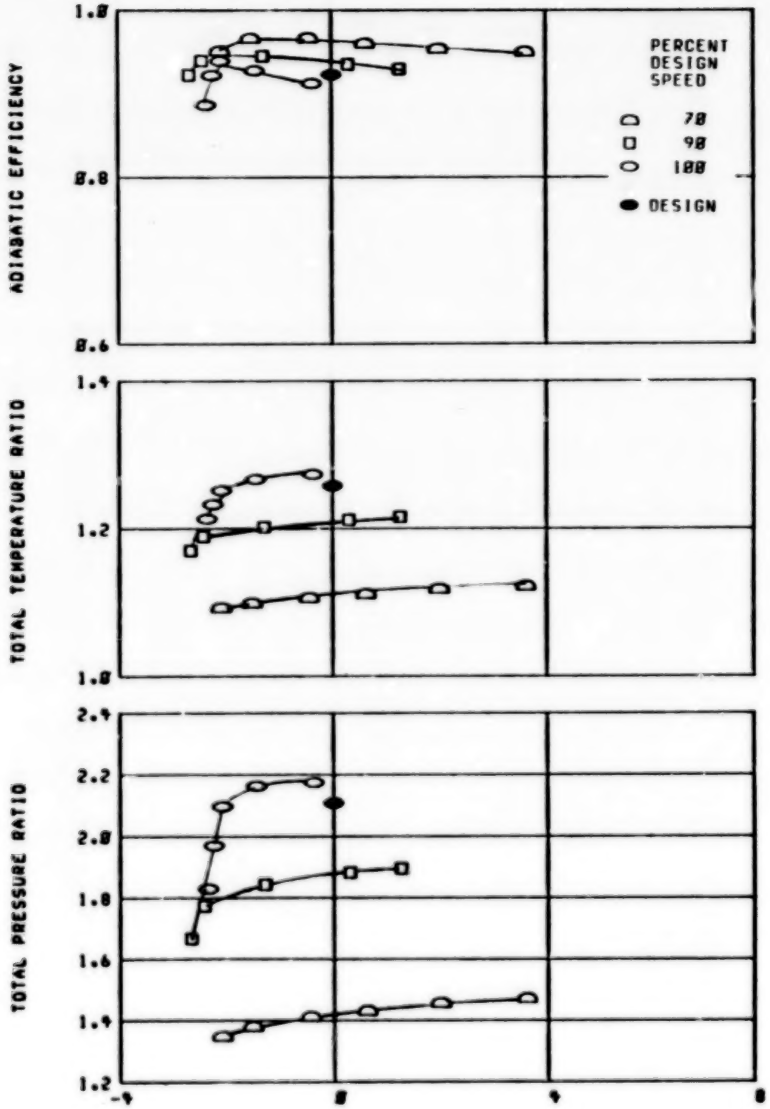
(f) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 37.



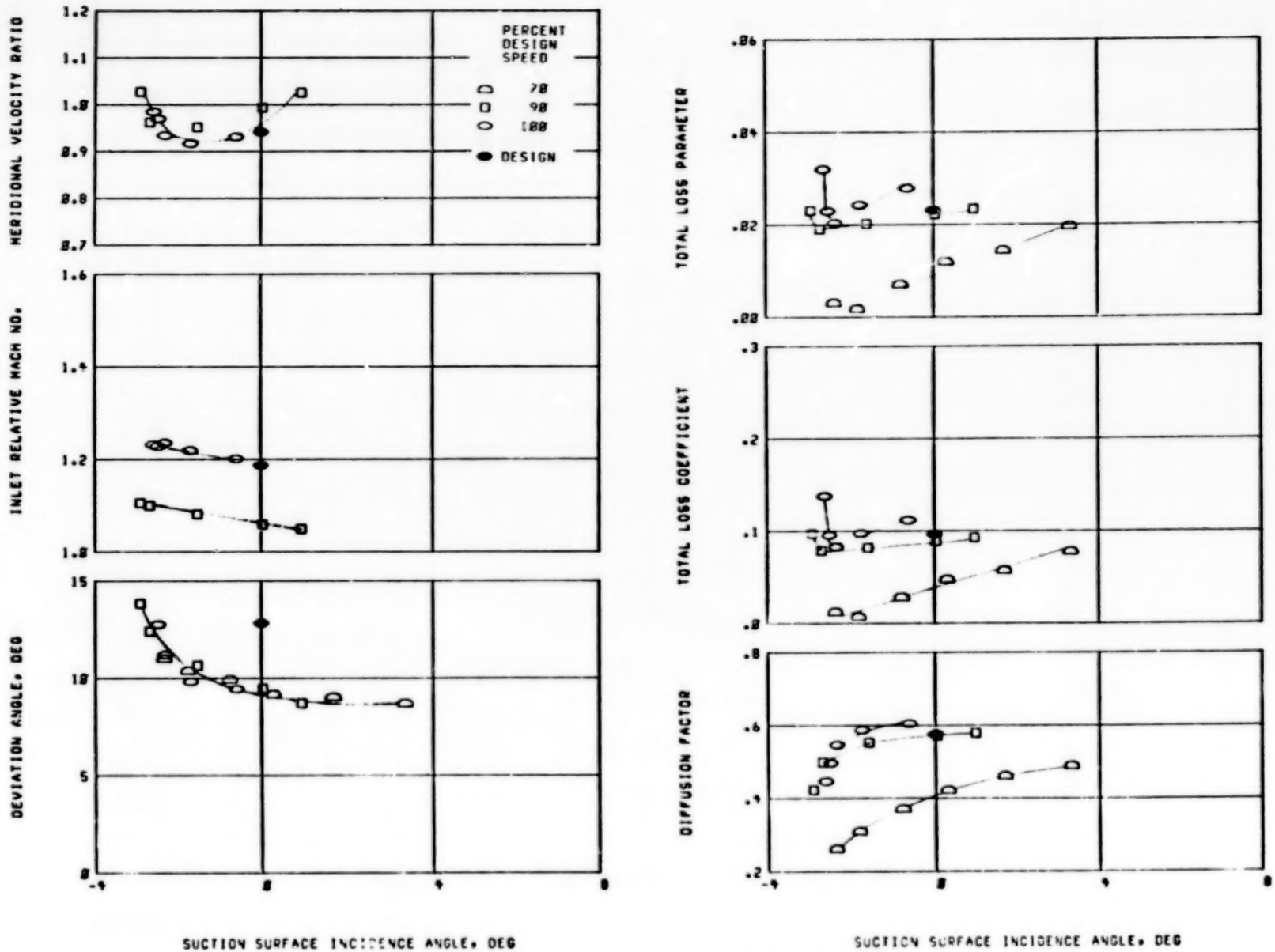
(g) 85 Percent span.

Figure 10. - Continued. Blade-element performance for rotor 37.



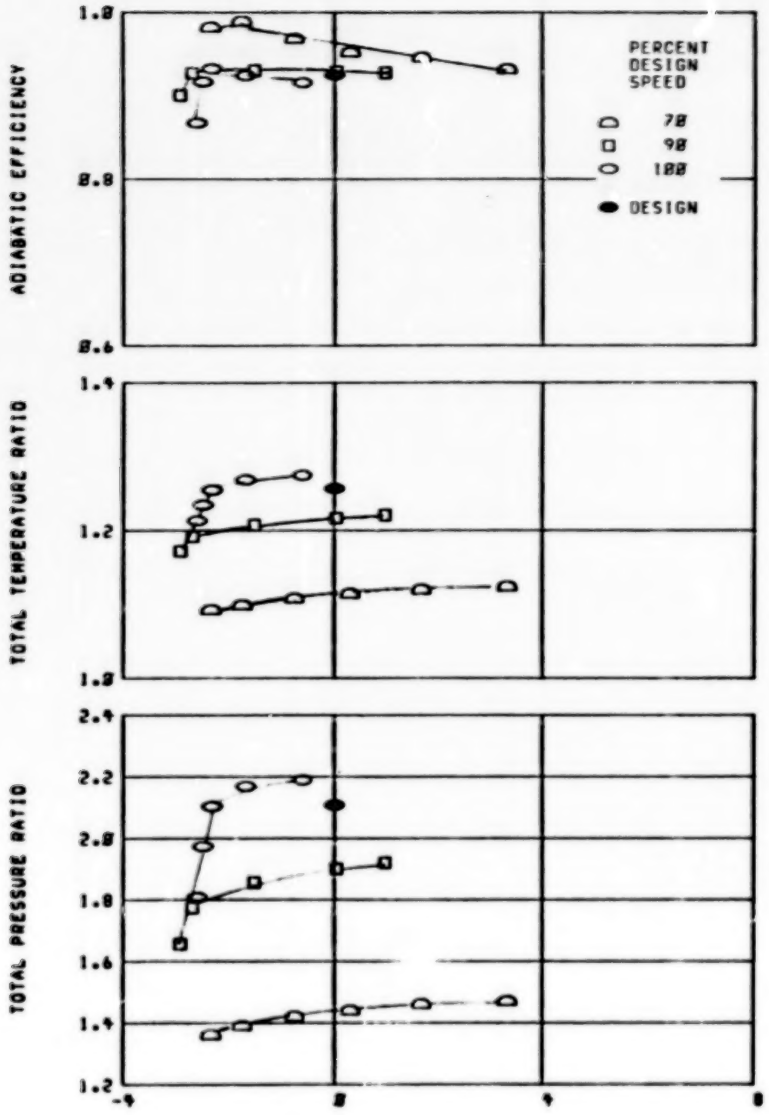
(g) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 37.



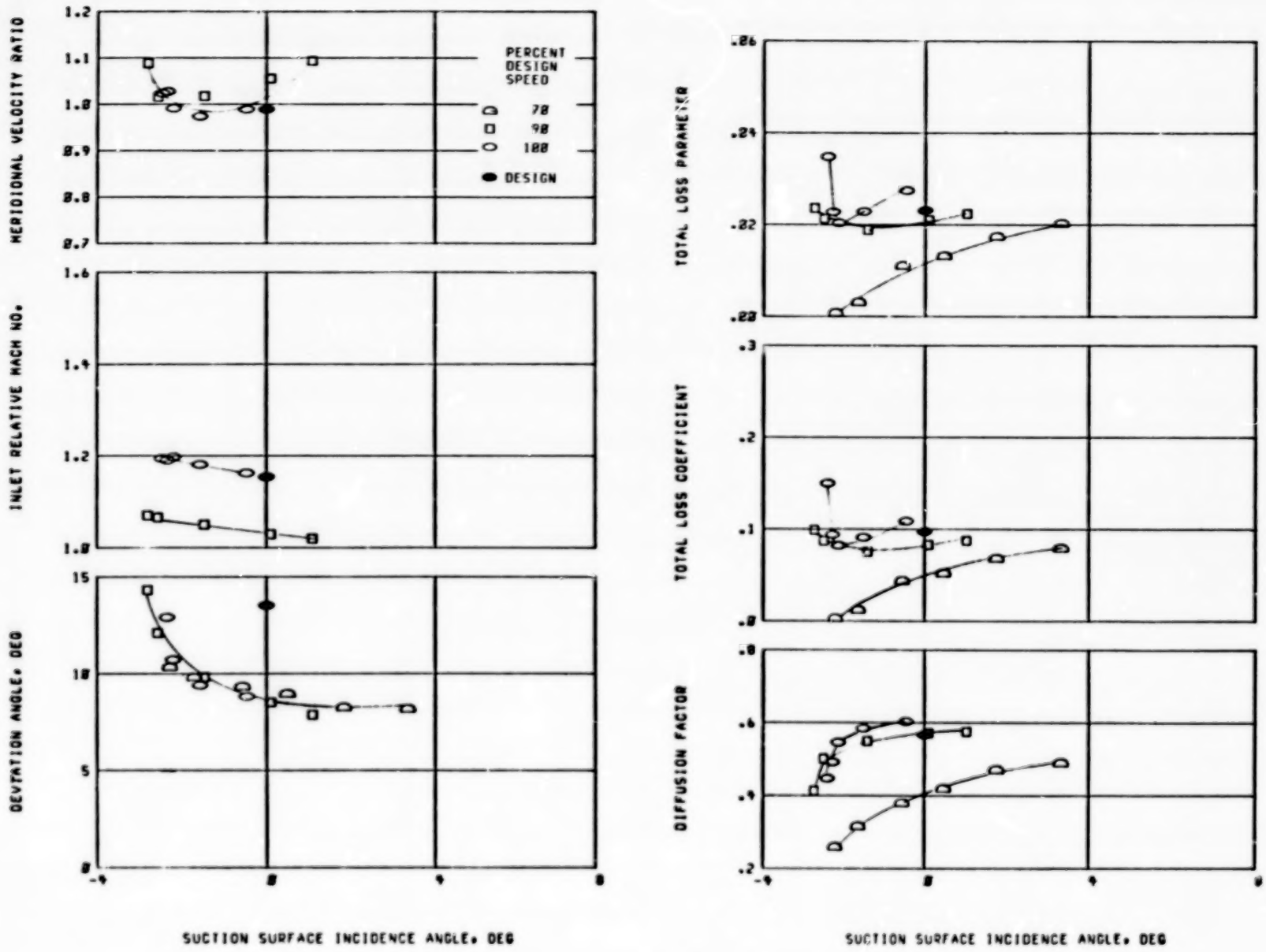
(h) 90 Percent span.

Figure 10. - Continued, Blade-element performance for rotor 37.



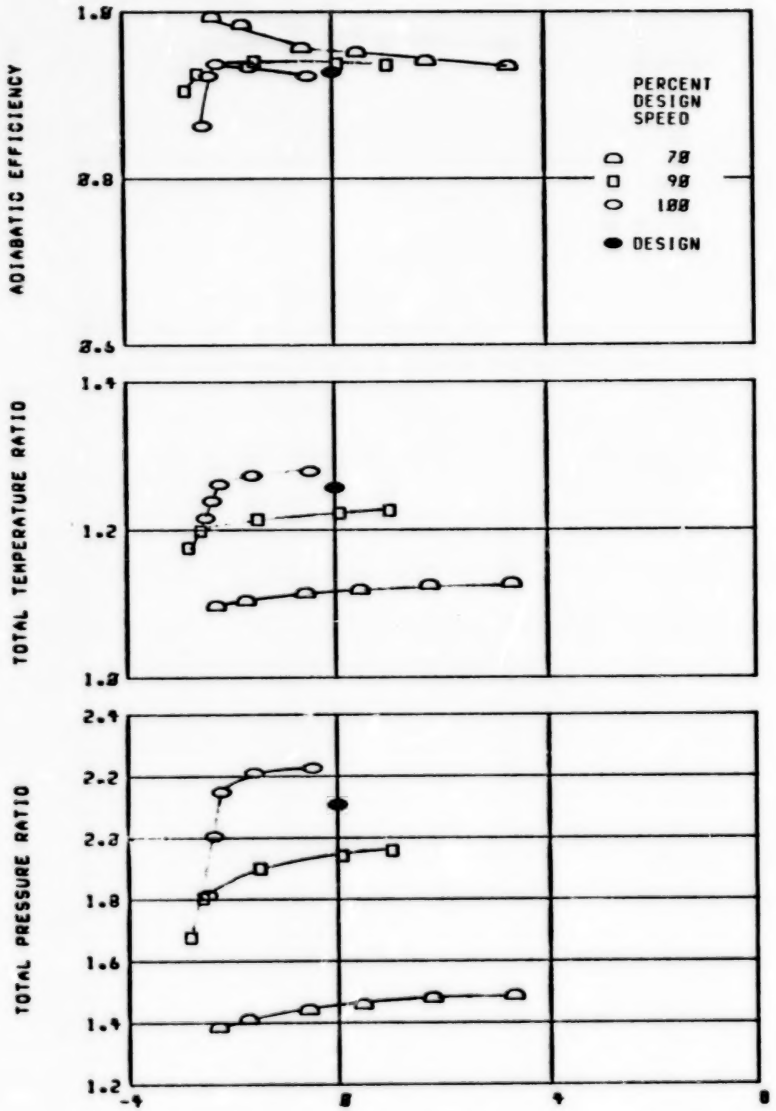
(h) Concluded.

Figure 10. - Continued. Blade-element performance for rotor 37.



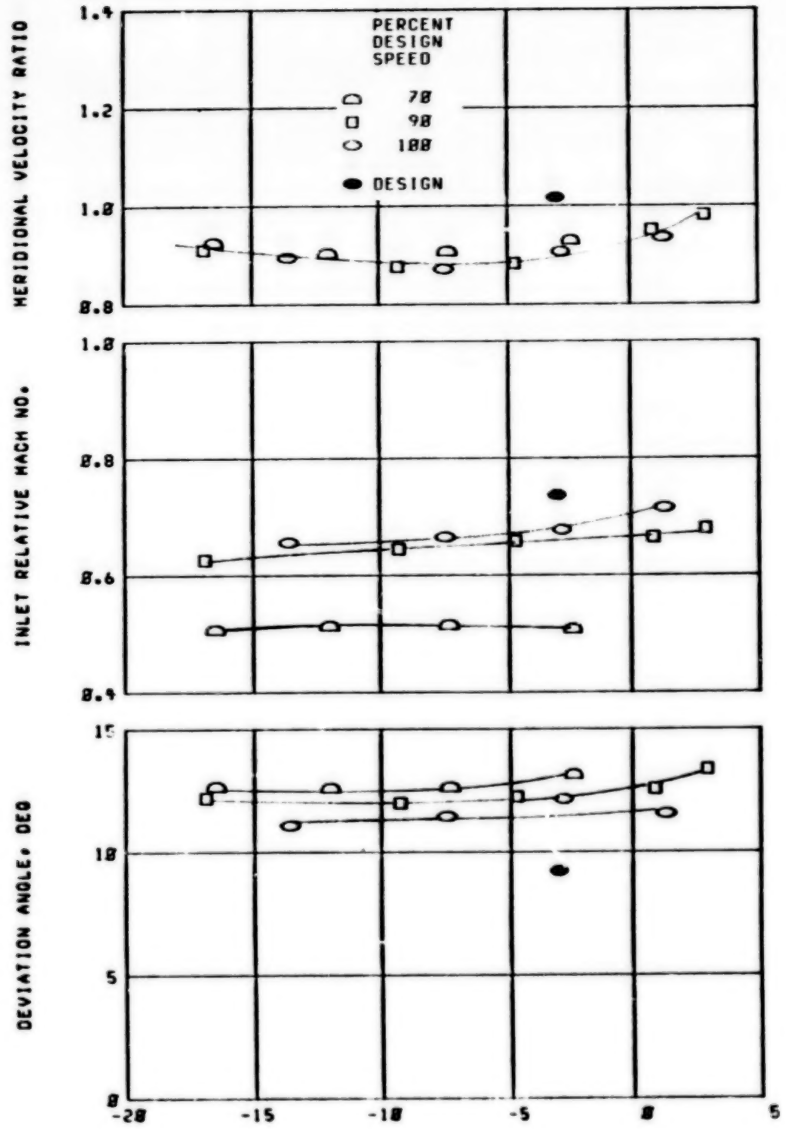
(i) 95 Percent span.

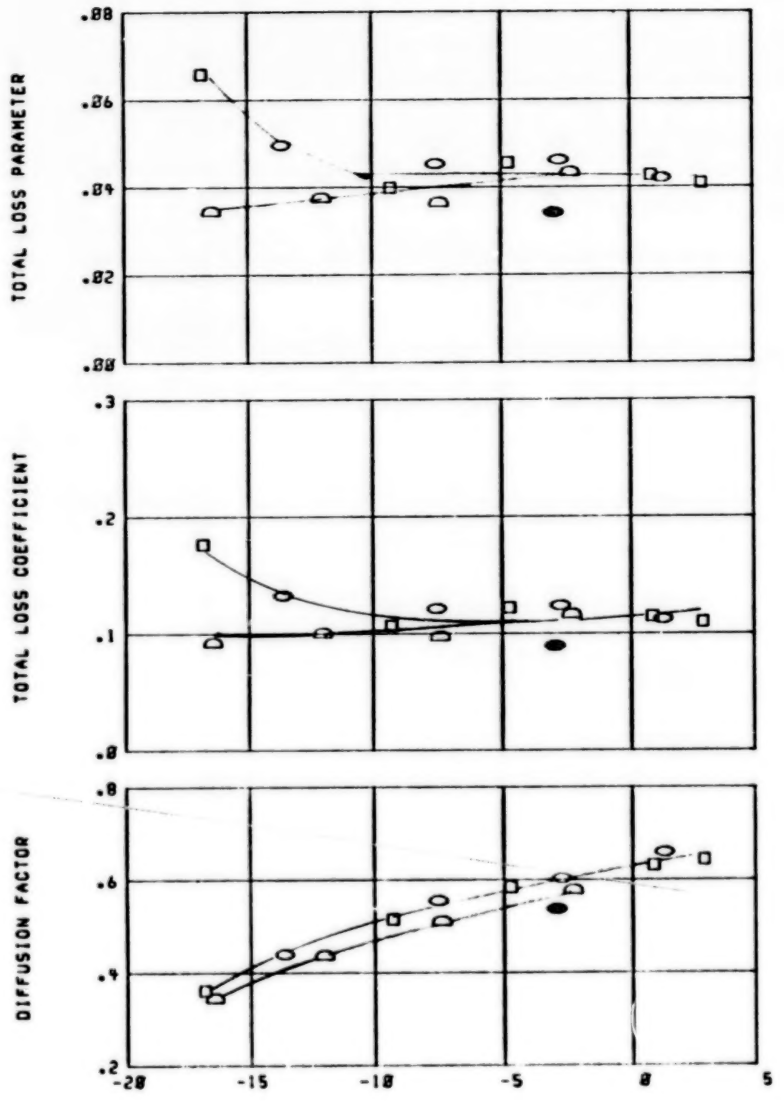
Figure 10. - Continued. Blade-element performance for rotor 37.



(i) Concluded.

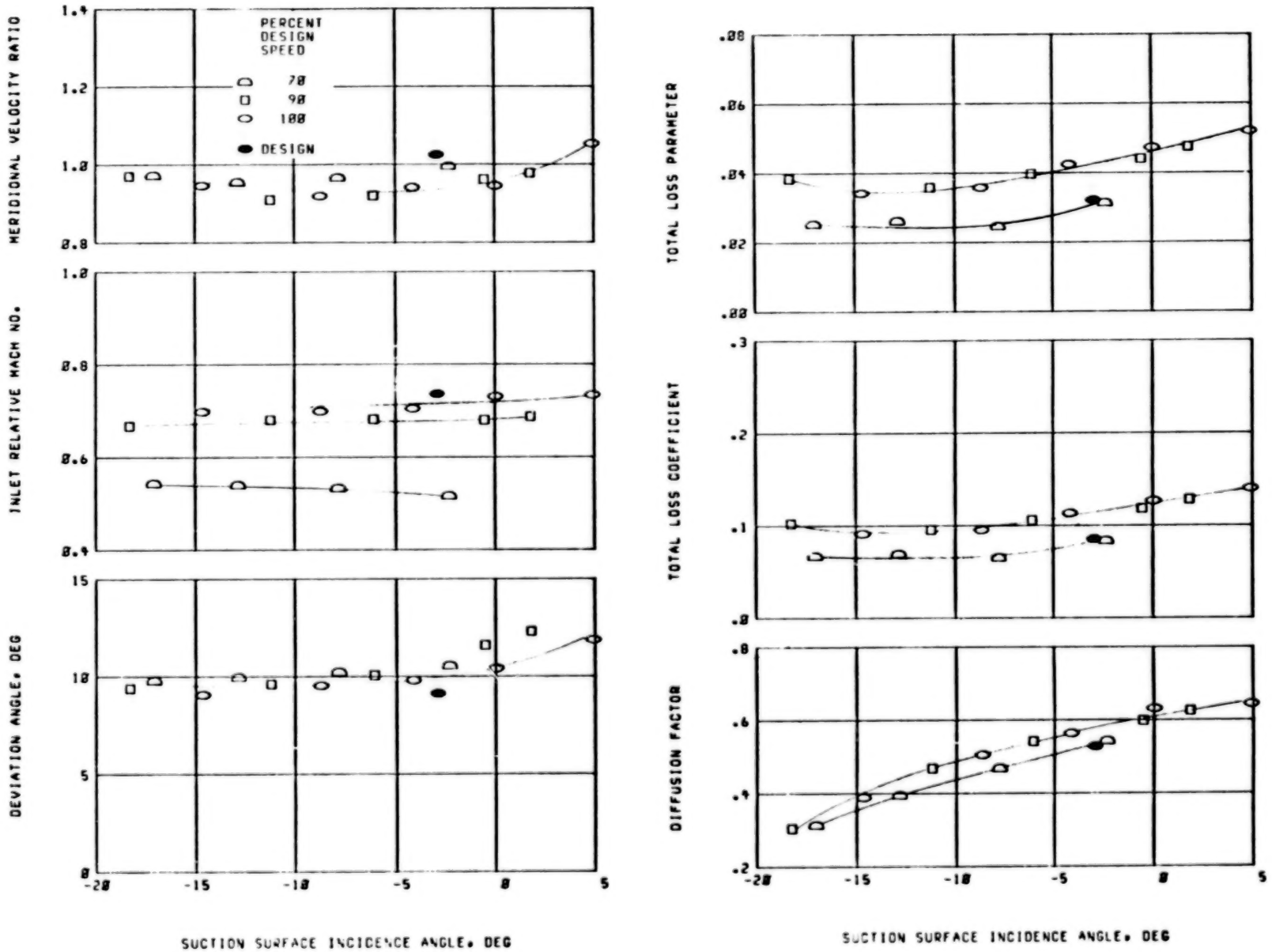
Figure 10. - Concluded. Blade-element performance for rotor 37.





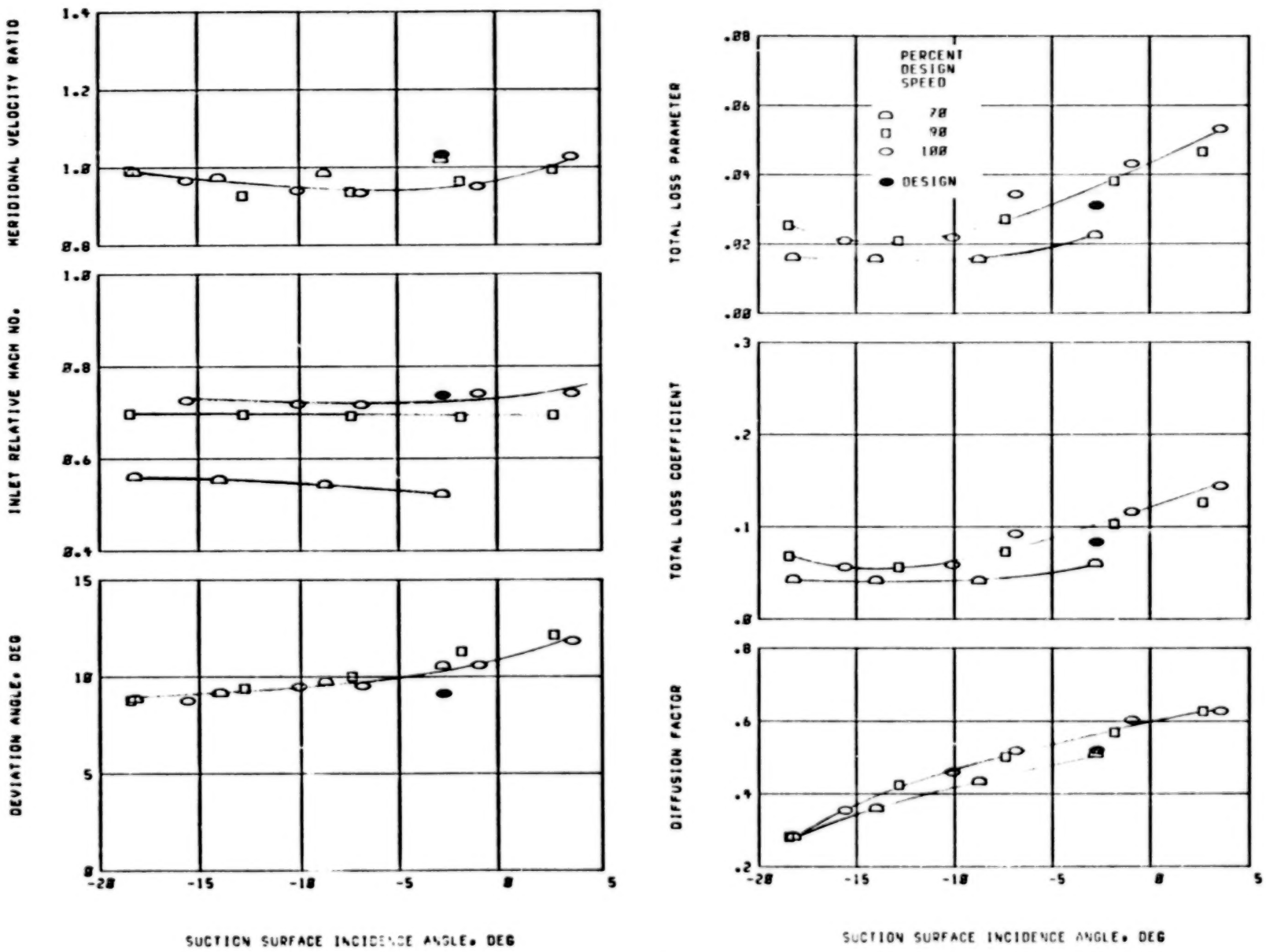
(a) 5 Percent span.

Figure 11. - Blade-element performance for stator 37.



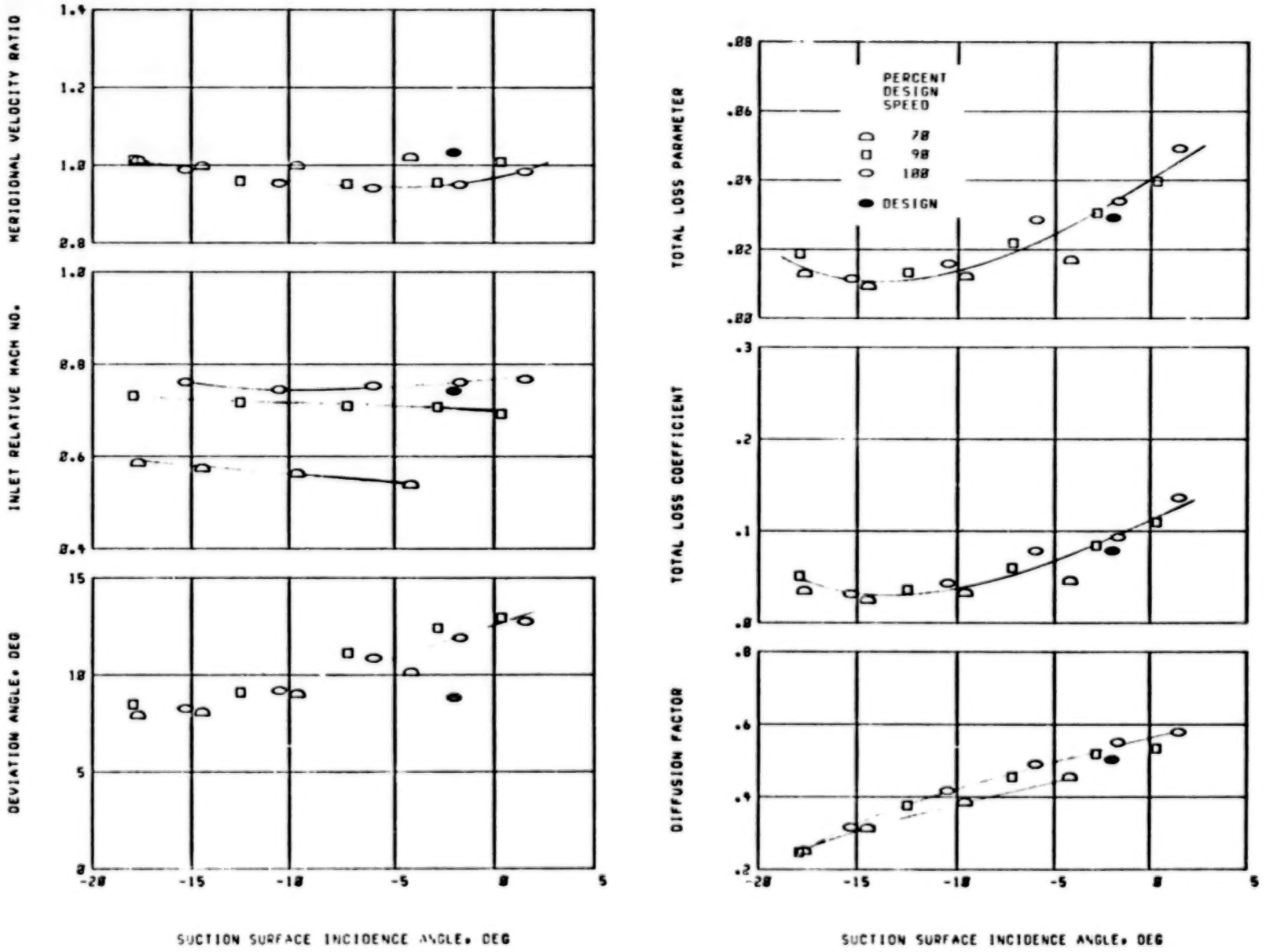
(b) 10 Percent span

Figure 11. - Continued. Blade-element performance for stator 37.



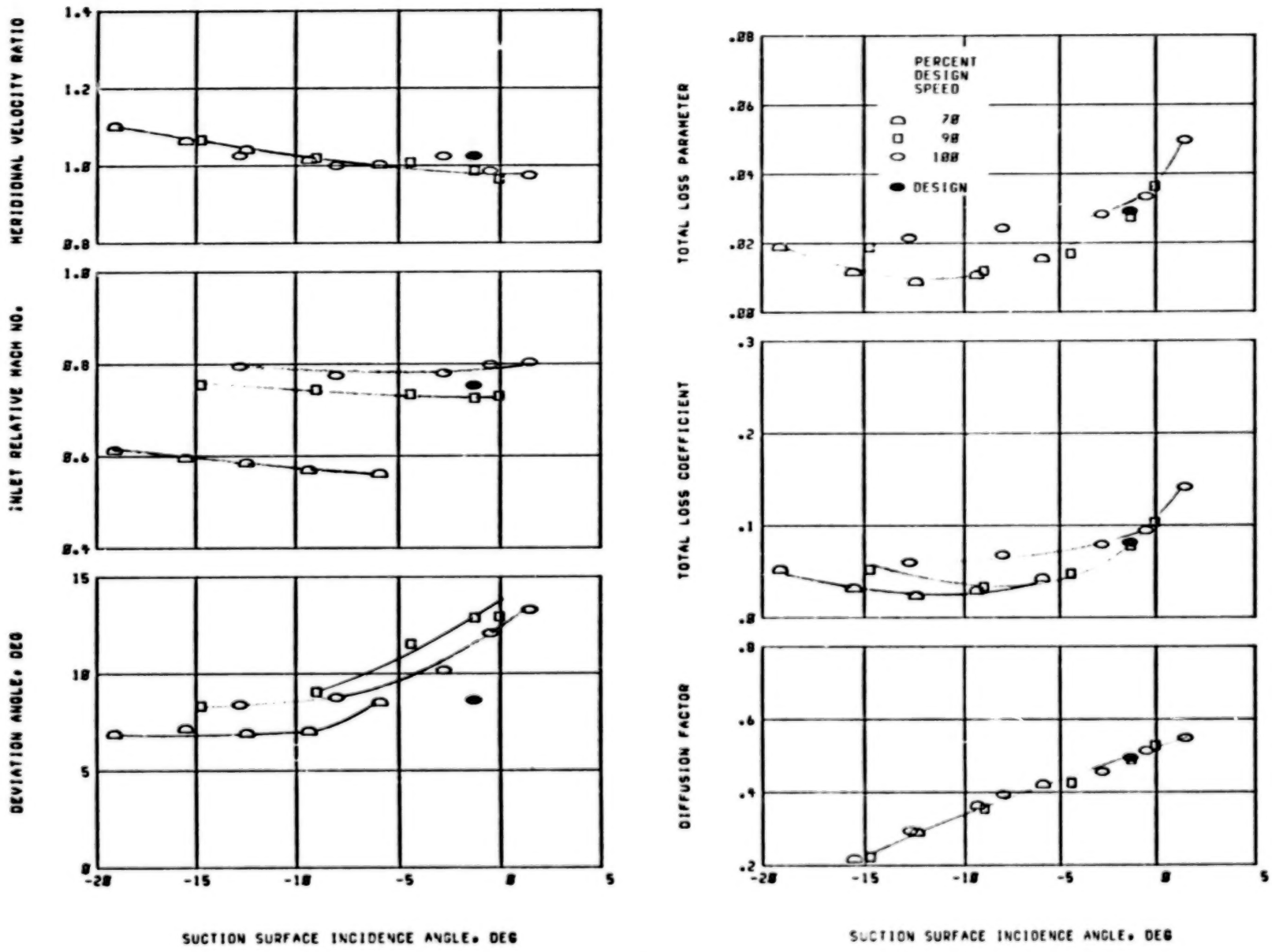
(c) 15 Percent span.

Figure 11. - Continued. Blade-element performance for stator 37.



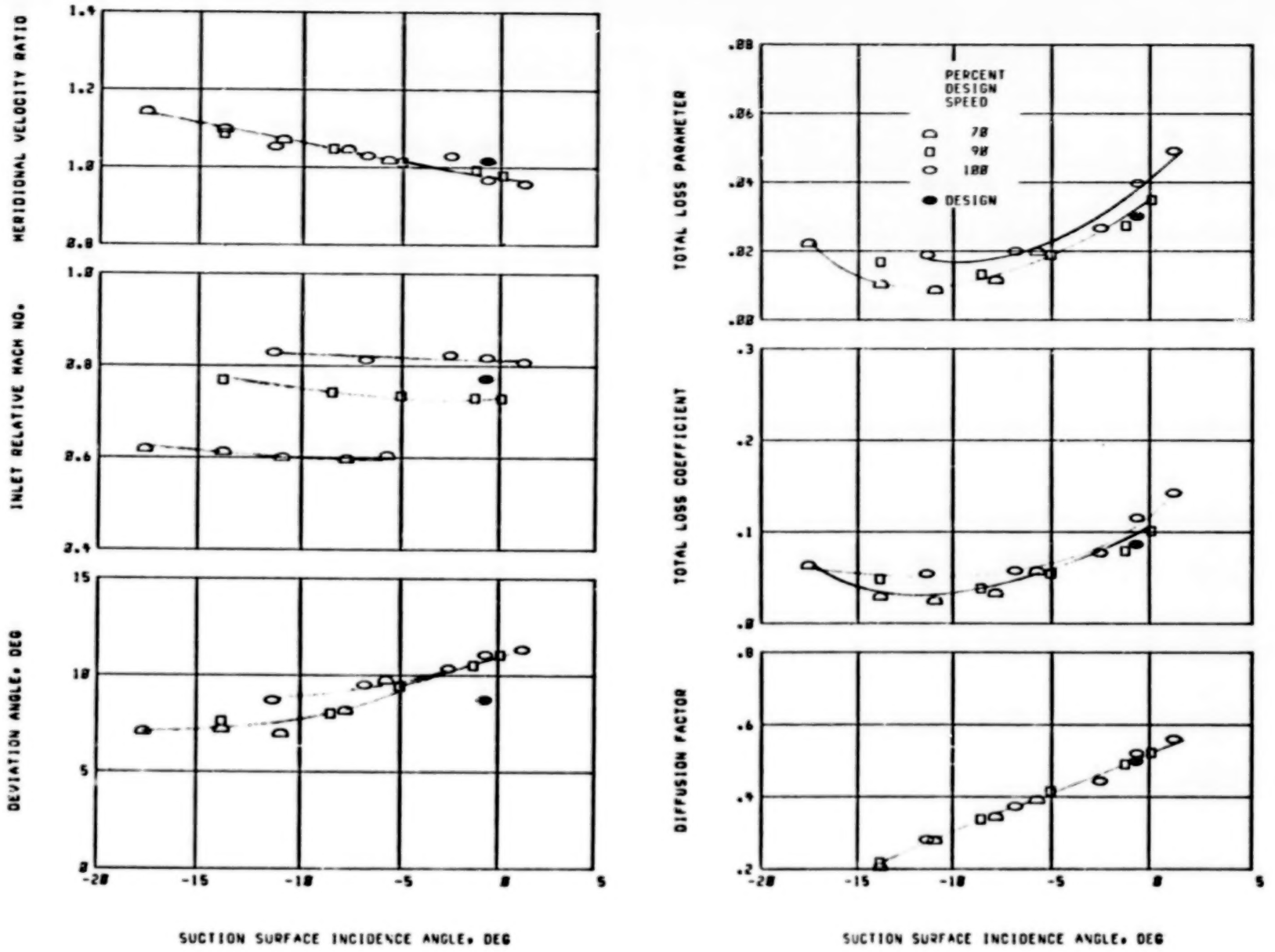
(d) 30 Percent span.

Figure 11. - Continued. Blade-element performance for stator 37.



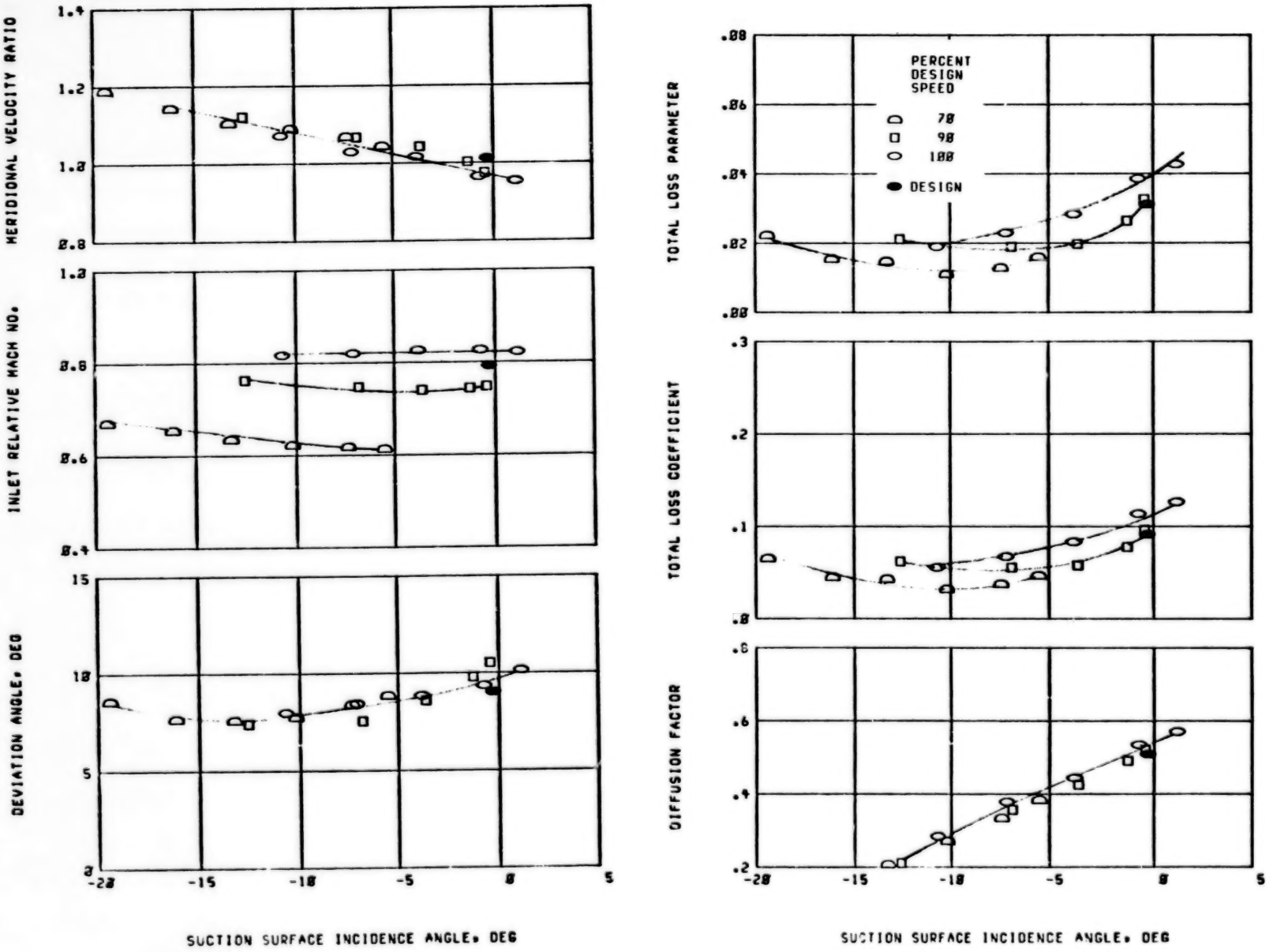
(e) 50 Percent span.

Figure 11. - Continued. Blade-element performance for stator 37.



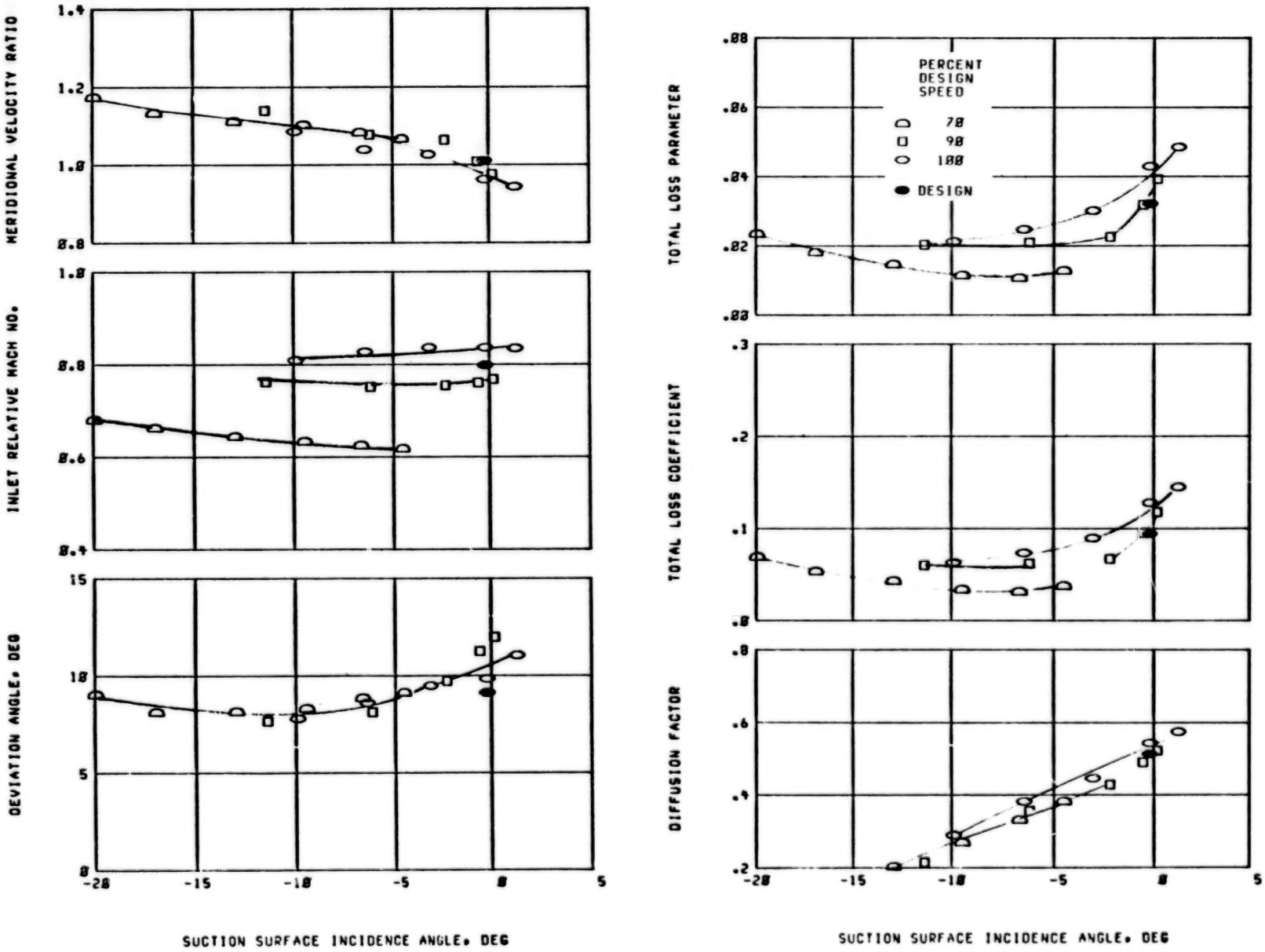
(f) 70 Percent span.

Figure 11. - Continued. Blade-element performance for stator 37.



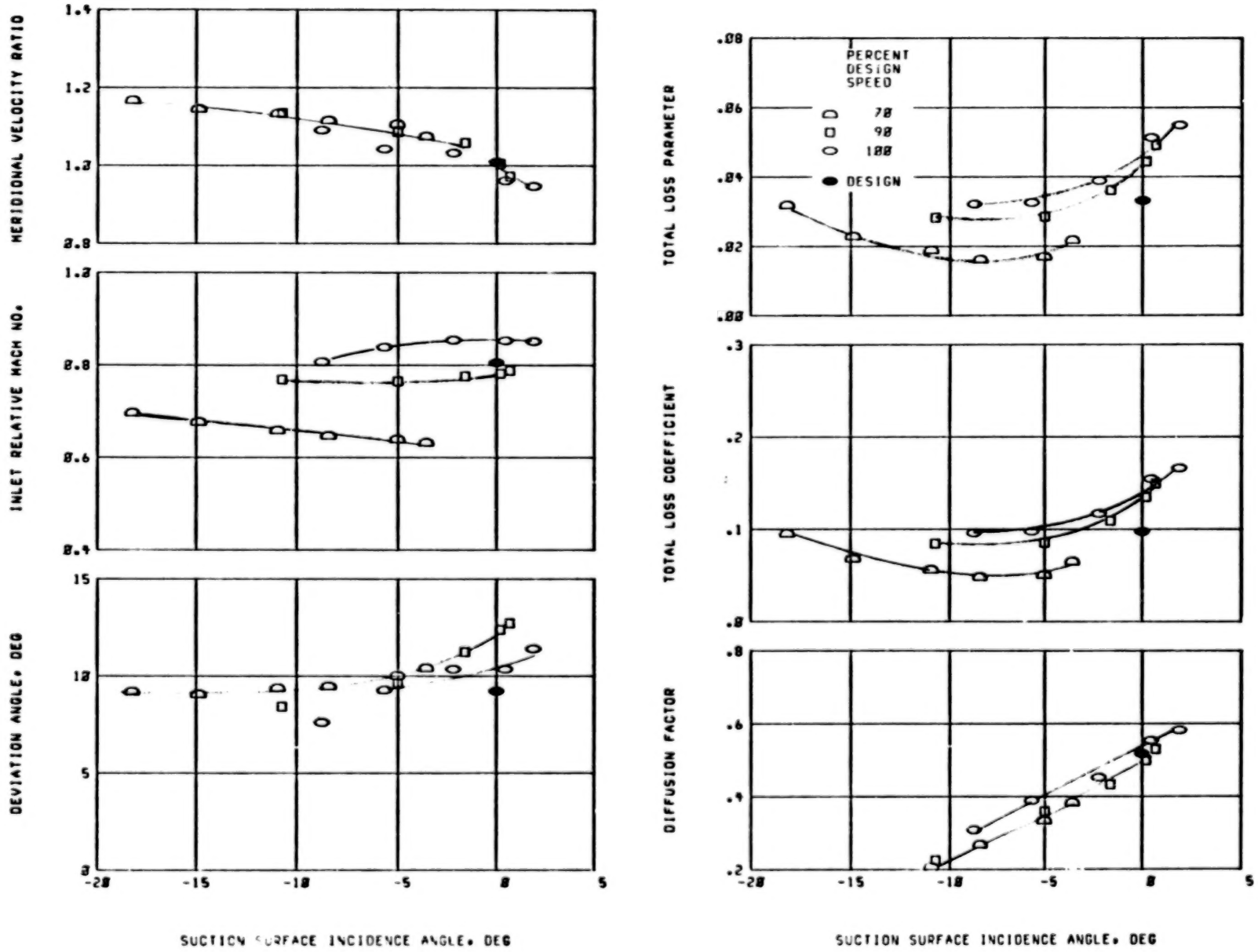
(g) 85 Percent span.

Figure 11. - Continued. Blade-element performance for stator 37.



(h) 90 Percent span.

Figure 11. - Continued. Blade-element performance for stator 37.



(i) 95 Percent span.

Figure 11. - Concluded. Blade-element performance for stator 37.

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15. Supplementary Notes

16. Abstract

The overall and blade-element performances of a low-aspect-ratio transonic compressor stage are presented over the stable operating flow range for speeds from 50 to 100 percent of design. At design speed the rotor and stage achieved peak efficiencies of 0.876 and 0.840 at pressure ratios of 2.056 and 2.000, respectively. The stage stall margin at design speed was 10 percent.

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